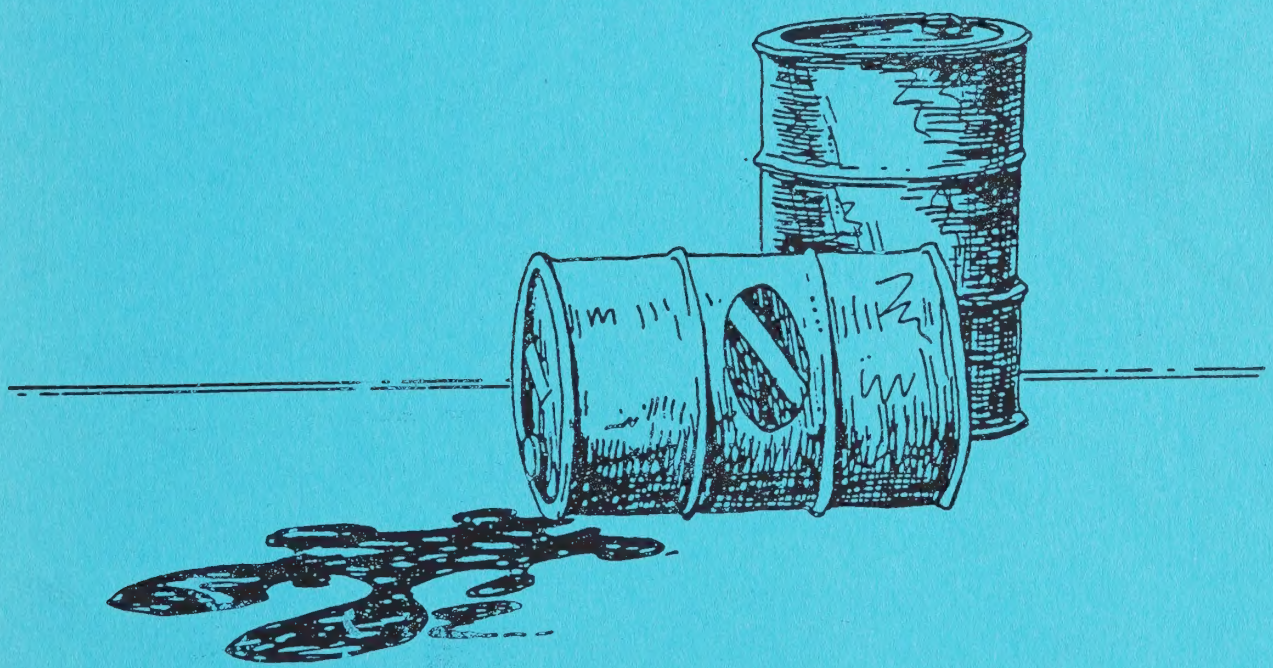
THE SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN

DRAFT
September 1, 1988



ABAG
ASSOCIATION OF BAY AREA GOVERNMENTS

MetroCenter
Eighth & Oak Streets
Oakland
(415) 464-7900

Mailing Address:
P.O. Box 2050
Oakland, CA 94604-2050
Fax: (415) 464-7979

ABAG
ASSOCIATION OF BAY AREA GOVERNMENTS
Mailing Address: ■ P.O. Box 2050 ■ Oakland, CA 94604-2050

MEMORANDUM

September 2, 1988

To: ABAG Depository Libraries

From: Emy Meiorin and Suzanne Larson

Enclosed is a copy of both the Draft San Francisco Bay Area Regional Hazardous Waste Management Plan and accompanying Appendices. The Plan includes the Environmental Impact Report (EIR) in the final chapter.

This document is under public review beginning September 1, 1988. The State of California and each of the Bay Area counties have received copies of the Plan. Public comments on the Plan and on the Draft EIR are requested. Comments should be submitted by October 18, 1988 to:

ABAG
Attn: Emy Meiorin
P.O. Box 2050
Oakland, CA 94604
RHWMP/EIR

Public comments are invited at the ABAG Regional Planning Committee meeting to be held on October 5, 1988 at 1:30 p.m. at MetroCenter, Eighth and Oak Streets, Oakland.

The Plan is scheduled for finalization in December 1988, approval by the ABAG Executive Board on January 19, 1989, and submission to the Department of Health Services by February 1, 1989.

Any questino regarding the Draft Plan or EIR should be addressed to Emy Meiorin (415-464-7941) or Suzanne Larson (415-464-7977).

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SAN FRANCISCO BAY AREA

REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN

Project Staff

Suzanne R. Larson, Project Manager

Raymond Brady
Terry Bursztynsky
Douglas Detling
Emy Meiorin
Diana Tesh
Edward Wyatt

ABAG Management

Revan A. Tranter, Executive Director
Eugene Leong, Deputy Executive Director

September 1, 1988

Association of Bay Area Governments
Metro Center
P.O. Box 2050
Oakland, California 94604

DRAFT SAN FRANCISCO BAY AREA HAZARDOUS WASTE MANAGEMENT PLAN

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I. INTRODUCTION

I.1 Purpose and Scope

The San Francisco Bay Area Hazardous Waste Management Plan is being developed to provide a regional perspective on the management of hazardous wastes in the Bay Area. The goal of the plan is to develop a comprehensive management system to protect public health, safety, and welfare while maintaining the economic strength of the region. The plan covers the nine San Francisco Bay Area counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

Safe management of hazardous wastes has become an increasingly complex problem. During the last several years, federal and state legislation addressing hazardous materials and waste issues has increased dramatically. In California alone, more than 155 laws were enacted between 1983 and 1986. Many have delegated responsibility for managing hazardous waste and hazardous materials to city and county governments. California Assembly Bill 2948 (Tanner, 1986) has given each county and four councils of governments the opportunity to draft a plan for managing hazardous wastes. This report represents the initial results of the Bay Area's regional effort.

The purpose of the regional plan is to serve as a resource document for county planning efforts and to identify hazardous waste management issues, needs and solutions at the regional level. This plan compiles information from all the Bay Area county hazardous waste management plans, and provides a regional framework for addressing hazardous waste management issues in the Bay Area.

The plan was formulated under the guidance of the Bay Area Hazardous Waste Management Task Force. The 35-member task force includes representatives from each of the Bay Area counties, cities, public interest groups, environmental groups, and industry. The task force and several subcommittees

have met at least once a month during the planning process to study various planning elements culminating in the production of this plan. Appendix 1 contains a list of the Bay Area Hazardous Waste Management Plan Task Force members.

Since an informed and involved public should lead to a more supportive public and because both the legislation and the Department of Health Services Guidelines required public education and participation elements, a public participation program was intiated early in the planning process. The outreach program included publication and distribution of the ABAG Hazardous Waste Reporter, ABAG's Around the Bay publication reported planning highlights on a regular basis, staff spoke at public symposiums and participated in radio interviews. We also sponsored informational seminars. In addition, all task force meetings were open to the public and an open agenda item for public participation was available at each meeting. Public education was a high priority objective of the planning process.

I.2 Regional Plan Structure and Its Relationship to County Hazardous Waste Management Plans

The regional and each county hazardous waste management plan were developed during the same time period. The regional plan serves as a resource document incorporating the county plans into one regional plan. In preparing and writing this plan, we have made a concerted effort to maintain conformity with county hazardous waste planning efforts. Both the Task Force and the subcommittees provided a forum for discussing and resolving issues of consistency in county and regional plan development.

Many major topics of plan development were resolved by committee agreement. However, since differences in county approaches do exist, especially in terms of data analysis, we developed some methods that differed from the county plans to provide a consistent approach to defining data used in the regional plan. This resulted in the county data as presented in the individual county plans, not entirely matching the figures presented in the regional plan. Our approach involved using data from county plans when the data were determined to be acceptably consistent between counties, in-house

developed data that were developed to insure consistency between counties, and in some cases, outside sources.

A complete summary by county and for the region of all of the suggested tables in the Department of Health Services Technical Reference Manual is presented in the Appendices and described in Chapter II. These data are compiled directly from the draft county plans as of March 1988. For regional purposes, however, we used several data sources, as mentioned above, to provide a uniform base to establish regional consistency. In each of the data Chapters (II, III, and V) a description of data sources explains our approach.

The Plan is organized into ten chapters. This chapter, the Introduction, lists the general goals of the Plan, and presents each of the regional policies designed to meet the plan objectives. The next four chapters discuss the current and future management of hazardous wastes. Wastes generated in 1986 are presented in Chapter II, and existing treatment facilities are described in Chapter IV. The estimated future waste stream is examined in Chapter III, with the facilities required to manage these wastes discussed in Chapter V. It is in these chapters that data regarding volumes of waste are presented.

An important comment should be made about the data presented in the tables in Chapters II, III, and V. Quantities may vary by one or two tons from one table to another. This is entirely due to rounding errors, since much of the data were originally given in fractions of tons and we rounded to the nearest unit. The value of these data rests in relative comparisons and in orders of magnitude, not in exact figures. In general all of the figures presented in this report should be considered "ball park" estimates. They should be viewed as providing a basic framework to plan management strategies for the future.

Siting criteria for future off-site hazardous waste management facilities are the subject of Chapter VI. These criteria were developed to provide guidance to local jurisdictions and to help provide regional siting consistency. Because hazardous waste reduction is one of the fundamental objectives of the Plan, it is given full attention in Chapter VII. The

emphasis on off-site managed waste raises the importance of the transportation of wastes, and this topic is covered in Chapter VIII. Implementation of the recommended policies is outlined in the Chapter IX. Finally, Chapter X discusses the requirements of the California Environmental Quality Act (CEQA) and presents the environmental impact report for the Regional Plan.

In the next section we present the Regional Plan's Goals and Objectives, then follow with the Regional Policies.

I.3 Goals and Objectives

This section outlines the overall goals, policies and objectives of the San Francisco Bay Area Regional Hazardous Waste Management Plan. Issue Papers No. 4 and No. 6 (contained in Appendix 5) provide the background upon which this and the following section are based.

The overall goal of the Regional Hazardous Waste Management Plan is to develop a comprehensive waste management system that protects public health, safety and welfare while maintaining the economic viability of the Bay Area. ABAG will carry out this goal by adopting a regional plan that accounts for all hazardous wastes generated in the nine-county region. Secondarily it will provide government and industry with management options that will help meet the 1990 ban on disposal of untreated hazardous waste to landfills. The plan must meet the intent of AB 2948 (Tanner 1986) and the Department of Health Services (DHS) guidelines while addressing regional needs and priorities.

The Regional Plan must meet the following objectives as outlined in the DHS Guidelines:

1) Quantify current hazardous waste generation and catalogue handling practices.

2) Estimate future hazardous waste generation rates.

3) Develop siting factors and criteria that provide guidance to local governments for use in evaluating potential hazardous waste management facility sites in the region.

4) Provide ample opportunity for public involvement in the planning process.

5) Assess the need for additional hazardous waste management facilities.

6) Address special problems posed by small quantity generator and household hazardous wastes.

In addition the Task Force has determined that the following objectives shall also be met:

1) Incorporate the hazardous waste management hierarchy as a basic element of the plan.

2) Outline waste reduction programs that can be implemented at the local level.

3) Propose safe future management practices.

4) Include provisions that provide incentives for safe and effective hazardous waste management practices.

5) Develop a process for future updating of the regional plan.

I.4 Bay Area Hazardous Waste Management Plan Policies

Policy statements are presented, followed by a discussion section. The policies were developed by the Task Force to meet the plan objectives. They are based upon technical information presented in subsequent chapters. Policy implementation actions are presented in Chapter IX.

Policy 1:

ABAG, Bay Area counties, cities, special districts, industry and the public shall work together to solve hazardous waste management problems.

Discussion

One of the primary objectives of the Tanner planning effort is for each county to define its own hazardous waste needs to assure that adequate capacity is available to manage all the waste generated in each county. In reality, most (if not all) counties will need to rely on some management facilities that are located outside their own jurisdictions. Hazardous waste is produced from a regional economy and must be managed based upon a regional effort. It is unlikely that any one county will be able to provide all the hazardous waste management facility services needed to manage the variety of waste streams produced within its boundaries. Counties will continue to be interdependent. Local governments and industry must work together to develop and define interjurisdictional agreements and to reach a consensus on important issues that facilitate systematic interjurisdictional approaches to better manage hazardous waste.

Issue paper No. 8, contained in Appendix 5, presents a discussion of issues affecting intercounty agreements. Although these agreements may offer solutions to facility siting dilemmas, they are very complicated and deserve more indepth attention. There are many agreement options available, ranging from the simple exchange of data among counties to the establishment of more complicated rebate programs.

Policy 2:

ABAG, counties, cities and special districts shall promote waste minimization as the preferred method of managing hazardous waste in the region.

Discussion

Hazardous waste minimization is in the best interest of the people and institutions of the San Francisco Bay Area and the State of California. The Task Force identified waste minimization as a priority goal early in the planning process.

The major forces currently driving waste minimization efforts are regulatory requirements and economics. Regulatory incentives include the 1990 ban on land disposal of untreated wastes. Higher costs for transportation, treatment, disposal, and insurance act as strong economic incentives. The larger generators are more likely to have the resources to minimize waste production, while smaller companies may need technical and financial assistance to decrease hazardous waste production.

This plan recommends that the local land-use permit process for new hazardous waste-generating businesses include conditions requiring an environmental audit to characterize hazardous wastes and materials that are used in processes that generate hazardous waste, a source reduction and recycling program, and an overall waste minimization program. A public education program for current generators (especially small quantity generators) is a potential mechanism for local government to encourage more waste reduction for existing businesses. The plan encourages all levels of government to implement programs that promote waste minimization activities.

Policy 3:

ABAG shall encourage counties, cities and special districts to implement the following hazardous waste management hierarchy at all waste generator and hazardous waste management facilities: source reduction, recycling, waste treatment, and residuals repository when required. Off-site recycling is preferable to on-site treatment and on-site treatment is preferred over off-site treatment. Maximum environmental protection shall be a primary determining factor in deciding whether to manage wastes on or off-site.

Discussion

As a first step, governments are urged to adopt and implement the hazardous waste management hierarchy in the management of their own hazardous wastes. Although this plan encourages the adoption of the hazardous waste management hierarchy, it also endorses maximum environmental and public health protection as a primary determining factor in deciding whether a particular management practice should be instituted. The hierarchy is meant to be a guide in prioritizing waste reduction techniques but may not be the best solution for all situations. The hazardous waste management hierarchy is described in more detail in Issue Paper No. 2, Appendix 5.

On-site treatment of hazardous waste is a higher preference management technique than off-site treatment. By initiating on-site treatment, transportation risks are reduced. On-site treatment also encourages the generator to become more familiar with the process producing the waste, and to view the actual cost of the waste stream as a part of the manufacturing process or service. It may provide further incentive for more waste reduction activities.

This policy is not intended to discourage the development of off-site facilities. Small quantity generators in particular will probably need to ship wastes off-site for treatment and disposal. Maximum environmental protection should be a primary determining factor in deciding whether to manage wastes on-site or off-site.

Policy 4:

In the siting of new hazardous waste management facilities, potential exposure of populations to hazardous waste should be minimized.

Discussion

This policy includes consideration of the location of facilities (buffer zones, etc.), transportation of wastes, and degree of hazard presented by a particular waste stream. Exposure potential will be reduced by implementing

the hazardous waste management hierarchy. When wastes must be transported, they should be routed on safe roads that are accessible to emergency response teams.

Local and state hazardous materials response units (ex: fire departments, highway patrol, health departments, other emergency service units) should be included in planning efforts to determine the best routes for transportation of hazardous wastes. The local hazardous materials contingency plan should address emergency responses to hazardous materials and waste accidents in local jurisdictions.

Policy 5:

A process must be developed to assure shared responsibility for the establishment of regional hazardous waste management facilities throughout the region.

Discussion

Hazardous waste management facilities serving regional needs shall be equitably distributed throughout the region. A process to insure the equitable distribution of facilities must be defined.

Policy 6:

When environmentally sound and economically feasible, the preferred alternative for restoration of contaminated sites that require clean-up shall be the use of on-site treatment methods rather than off-site treatment.

Discussion

The activity of moving wastes from a contaminated site or a past disposal site to a new site should be discouraged. Since on-site management would have to meet all the same regulatory requirements as off-site management, operators of these sites should be encouraged to mitigate problems, using on-site techniques such as recycling, bioreclamation, soil venting with

contaminant recovery, containment (or the environmental equivalent), and other on-site treatment procedures when these are effective. On-site waste management, especially containment, shall be done in a manner that provides environmental protection equivalent to having the wastes managed off-site at an approved facility.

On-site containment may be the most effective and environmentally sound means of managing a contaminated site. This plan requires that any corrective action, including leaving wastes in place, meet siting and construction regulations to the extent feasible and necessary.

On-site hazardous waste management will reduce transportation risks and simplify planning for future disposal capacity. Small quantities of clean-up wastes that can be easily removed may be transported for off-site treatment and disposal, but on-site treatment should always be considered first. This policy is not intended to discourage development of off-site facilities. Maximum environmental and public health protection should be the determining factors in deciding whether on-site or off-site management is best.

Policy 7:

Permanent local programs should be developed to reduce and manage the hazardous waste from households and small quantity generators (SQGs).

Discussion

The current system for managing the waste streams generated by small quantity generators (SQGs) and household hazardous waste generators is inadequate. Development of local transfer and recycling facilities that provide services to these waste generating groups should be encouraged. Although these wastes make up only an estimated 3% and less than 1%, respectively, of the total Bay Area hazardous waste stream, these wastes do pose an environmental threat. Based on information presented in this report, small quantity generators in particular pose a serious environmental threat, since much of their wastes are not properly managed. In order to deal with this problem adequately, permanent facilities to manage SQG wastes

must be developed that can provide economical and convenient services to these generators. It is not enough to pass regulations making it illegal to dispose of household hazardous waste in the garbage can. An alternative to illegal garbage or sewer disposal of hazardous wastes must be made available to households and SQG businesses.

Systems to manage these wastes must be established. Financial and other incentives for companies in the hazardous waste management business to address small waste streams should be made available (e.g., low interest loans). Local governments may want to consider requiring new off-site hazardous waste facility operators to provide services for these waste generators as a condition to operate. The generators of these wastes must be educated on legal and safe practices.

Policy 8:

ABAG and local governments shall encourage programs and facilities that provide for recycling of household and SQG wastes.

Discussion

Small quantity generators and households contribute significantly to several major waste streams (ex: waste oil and paints) that can be managed effectively through recycling. Disincentives to recycling these wastes must be removed. As the economic picture changes, incentives and disincentives are created, effecting safe and proper handling of hazardous wastes. Waste oil is an obvious example. Several years ago, generators of waste oil were paid for this by-product. Many service stations were happy to accept SQG and household generated waste oil. With changes in oil prices, the generators must now pay to recycle their waste oil. This economic change created a decrease in the availability of collection sites. SQGs and households now have fewer locations to dispose of waste oil conveniently and cost-effectively. Disincentives, such as increased cost for recycling, must be considered and addressed by local government programs. SQGs and households can be easily influenced by these changes. Providing incentives for recycling is an important goal, especially with the natural fluctuations and changes produced in the economy.

Policy 9:

The permit process for SQG and household waste transfer and recycling facilities should be streamlined at the federal and state level while insuring consistency with local goals and policies and protecting local government decision making options.

Discussion

The permitting process for transfer and recycling facilities is an obstacle to development of permanent household and SQG management facilities. In the past some locations have been issued temporary exemptions. This plan supports a permanent solution rather than the piece meal approach of the past. The State permitting process must be clearly defined and carried out to provide safe management alternatives.

Policy 10:

Educational programs and materials should be developed by ABAG for use in local educational programs targeting the public, generators and government facilities. The purpose of these efforts is to increase awareness of the problems and to facilitate solutions to hazardous waste management issues.

Discussion

Public participation in hazardous materials and waste management issues must be encouraged. Resources to continue public information/education campaigns must be allocated. This plan encourages the development of public education and technical assistance programs. The level of promotional, educational and assistance programs to be developed and implemented locally will need to be defined by local governments. ABAG should develop educational materials that can be distributed through local programs. SQGs and the public in general, need to be educated about how to avoid producing hazardous waste by implementing the principles encompassed by the hazardous waste management hierarchy. In the cases where generation cannot be avoided, proper handling and disposal practice guidelines must be made readily available.

Policy 11:

As a first priority, funds collected by jurisdictions from hazardous waste management facilities should be used to finance that jurisdiction's hazardous waste programs.

Discussion

The Tanner legislation authorizes a city or county to impose a 10% tax on annual gross receipts from a hazardous waste management facility. This plan recommends that as a first priority, these funds be used to finance local hazardous waste management programs as opposed to reverting to city and county general funds.

Policy 12:

A study should be made of the possibility of increasing the cost of consumer products containing hazardous materials so that the price reflects the cost of disposal. This increment in price should be made available to the local agencies conducting hazardous waste programs. In addition, further study of funding alternatives that incorporate incentives for waste reduction are required.

Discussion

Local governments need financial support in order to implement hazardous waste programs effectively. It is a recommendation of this plan that the price of consumer goods containing hazardous materials should be increased to reflect the cost of disposal and used to finance hazardous waste programs. This may serve as an incentive for consumers to stop buying products containing hazardous materials thereby reducing the need for local hazardous waste programs. On the other hand, proceeds from consumers buying these products can be utilized to finance educational, recycling and disposal costs.

II. CURRENT HAZARDOUS WASTE GENERATION (1986)

II.1 Introduction

In order to plan for the management of hazardous wastes within the region, it is necessary to define current management practices. Data have been collected by ABAG and the counties in order to define the current picture as accurately as possible. The "current" situation is based on information from 1986. This chapter describes the various data sources and presents our best estimate of the current picture.

The DHS guidelines recommended that a specific set of tables be included in this report. These tables (A-Q) are contained in Appendix 7, and are based on data from the Draft County plans as of March 31, 1988. The data presented in the report proper combine data from various sources, as mentioned previously and are described more fully in this and following chapters.

II.2 Data Sources and Methods

The hazardous waste generation figures for 1986 were gathered from a variety of sources. This section reviews the sources of data utilized to estimate quantities of waste generated for 1986 and describes some of the limitations of these data.

The Department of Health Services (DHS) collected data that were utilized to estimate quantities of waste generated. The DHS data used by ABAG and the individual counties includes hazardous wastes shipped off-site and those wastes that are managed on-site. The off-site waste information is based on hazardous waste manifest data contained in the DHS Hazardous Waste Information System (HWIS). All manifested shipments of hazardous waste within the state are recorded in this computerized data set. The following data elements are included in the data base:

Generator: EPA number, company name and address
Transporter: EPA number, company name and address
Disposal or Treatment Facility: EPA number, company name and address
California waste category number
Disposal method
Quantity of waste
Quantity unit
Shipment date
Receipt date

In order to categorize waste quantities by industrial classification, it was necessary to code the Standard Industrial Classification (SIC) for each waste generator on the data base for each county. The SIC codes were entered onto computer by ABAG.

The DHS keeps the data in two separate computer files depending on the completeness of the manifest information entered. The data on less complete manifests are contained in the "suspense" file until it is updated when more complete and accurate information becomes available. The "history" file contains the more complete and accurate data. The DHS combined these files and provided these data to the counties and to ABAG.

Each county's staff reviewed these DHS data for accuracy and completeness. County staffs made changes to the data when errors were identified and then submitted written documentation to ABAG describing changes that were made to the database in order to correct misinformation.

For estimates of the amount of hazardous wastes managed on-site, the counties received data culled from the Annual Facility Reports for waste treated on-site and the Monthly Reports for on-site hazardous waste disposal. These data were of limited use. They tended to be incomplete in many cases. For estimating on-site tonnages we conducted a literature review and developed a method described in Section II.4

Most counties reviewed and corrected the original data submitted to us by the DHS. Thus the data utilized in this report are more accurate and

complete than the original data DHS submitted to each county and ABAG to initiate the process.

II.3 Wastes Shipped Off-site: Types and Volumes

A wide variety of hazardous wastes are shipped off-site for treatment and disposal in the San Francisco Bay Area. All legally shipped hazardous wastes are tracked using the Uniform Hazardous Waste Manifest document as the basic system tracking element. This system provides the "cradle to grave" monitoring of hazardous waste flows throughout the nation. The DHS HWIS is the computerized system that records all shipments within the state. These data form the basis for the information presented in this section.

The DHS recommended that data be presented using seventeen (17) waste groups. This requires that the eighty (80) California Waste Codes identified on the manifest data be aggregated into these seventeen groups. The California Waste Categories to Waste Group conversion table provided by the DHS is contained in Appendix 3.

Table II-1 describes the quantities of hazardous waste shipped off-site by generators in the San Francisco Bay Area by the 17 waste groups for 1986. A total of 551,506 tons of hazardous waste were shipped off-site by generators in the Bay Area. The largest waste group generated in 1986 is composed of non-metallic inorganic liquids, accounting for 24% of the total regional waste stream. This large volume group primarily consists of contributions by the International Technology Panoche Facility in Solano County. A unique situation resulted in 106,735 tons of non-metallic inorganic liquids entering the manifest system in 1986. This occurrence was due to unusual circumstances at the facility and is not expected to occur in the future. If the IT Panoche facility contribution is subtracted, then non-metallic inorganic liquids contribute only 6% to the overall total manifested wastes for 1986. This is a more realistic estimate of the volume of waste generated for this group. Waste oil represents the next largest group with 16% of the waste stream, followed closely by miscellaneous wastes with 14% of the total contribution. Miscellaneous wastes include materials such as

asbestos, inorganic solids, pharmaceuticals, empty containers, and photo and lab wastes.

Table II-2 shows the off-site hazardous waste contribution from each county in the region. Contra Costa County generators manifested more than any other county. Table II-2A shows the same data corrected for the anomaly (described previously) in Solano County in 1986. Upon review we see that Contra Costa contributes about 30%, followed by Santa Clara County at about 20% and Alameda and San Mateo Counties both contributing about 15% each to the total regional manifested waste stream. All the other counties contribute less than 10%, with the smallest contribution from Napa County at just over 1,000 tons.

Table II-3 illustrates the contribution from each county in the region by the 17 waste groups. For the waste oil group, waste quantities can be easily attributed to a county other than the generating county because of the "modified manifest" technique commonly used for manifesting waste oil. We feel that on a regional basis , that is, summing all the county waste oil generation numbers together, the effect of this is minimal, but on a county by county basis this could have substantial impact on generation figures. For instance, in San Mateo County, the county plan indicates that approximately 29,000 tons of waste oil were generated from sources outside of the county although they appear in the manifest system as being generated in San Mateo County. The number used in this report, 36,000 tons, thus over estimates the contribution from San Mateo County but likely reflects waste generated for the most part within the region. San Mateo County had a number of local waste oil haulers in 1986 that contributed to this situation. Waste oil generators contribute the largest volume to the regional waste stream once we correct for the Solano County non-metallic inorganic liquid anomaly.

II.4 Wastes Managed On-site

Data available from the DHS Annual Facility Report appeared incomplete and of limited usefulness for estimating the volume of wastes managed on-site. On-site managed hazardous waste refers to those wastes that are generated

and treated or disposed at their location of generation. We therefore conducted a literature review of available sources to develop a consistent method of estimating the contribution to the total hazardous waste stream that is managed on-site within the region.

Original data available to estimate the contribution to the total waste stream managed on-site was scarce. Although we came across several published estimates, we found that they frequently relied upon the same source of information. Four independent sources were identified.

The Environmental Protection Agency (EPA) has published estimates of on-site management in several nationwide publications. According to these estimates about 96% of the nation's hazardous waste is treated or disposed of on-site (EPA, 1986 and EPA, 1987). These estimates are based on two surveys of active hazardous waste management facilities in 1981 and 1985.

The State of Washington recently published the 1985 Hazardous Waste Annual Report Summary (Washington, 1987). The data presented here indicates that 76% of wastes generated in the state are treated on-site. The report states that 61% of all hazardous wastes were contaminated waste waters which were treated on-site. The remaining 15% of wastes treated on-site were non-waste water hazardous waste. The method used for our estimate also includes contaminated waste waters.

Since nationwide and Washington State statistics may not reflect the situation in California and the Bay Area specifically, we also examined statistics for California counties. In 1986, the DHS published a report which described tonnage estimates for on-site and off-site management for counties in California (DHS, 1986). According to these estimates, 87% of hazardous wastes generated in California during 1981 were managed on-site. When we reviewed these data for the nine Bay Area counties it was shown that 92% of the region's waste was managed on-site.

Since the DHS estimates for the Bay Area (92%) and the EPA estimates for the nation (96%) were quite close, they provide support for the accuracy of each estimate. The Washington State data also indicates that much larger quantities of waste are treated and disposed on-site as compared to off-

site. Because we were interested in the nine Bay Area counties, we used the DHS data (DHS, 1986) to estimate the on-site tonnage figures for each of the nine Bay Area counties. The following county specific proportions derived from the DHS report were used to estimate on-site management of industrial hazardous waste:

County	On-site	Off-site
Alameda	90%	10%
Contra Costa	94%	6%
Marin	18%	82%
Napa	0%	100%
San Francisco	64%	36%
San Mateo	93%	7%
Santa Clara	94%	6%
Solano	79%	21%
Sonoma	54%	46%
Regional (weighted average)	92%	8%

Estimates of on-site treatment and disposal of hazardous waste are difficult to calculate because of a dearth of available data. However, since the volumes appear to be so much larger than for off-site managed hazardous waste, there is a need to focus attention on on-site activities. In addition, with escalating costs and increased liability for off-site management, on-site management activities are likely to increase. An example of differences in estimates for on-site waste treatment and disposal is seen in the Contra Costa County Draft Hazardous Waste Management Plan.

In Contra Costa County the DHS facility reports were supplemented by a survey of businesses with on-site treatment and/or disposal permits as well as the largest hazardous waste generators within the county. Based on these data it was estimated that 267,187 tons of hazardous waste was treated or disposed on-site in 1986 by generators in Contra Costa County. This estimate of on-site treatment and disposal (267,187 tons) represents a 10-fold difference from the estimate based on our methodology (2,100,007 tons for Contra Costa County). This difference demonstrates the difficulty in estimating quantities of hazardous waste treated and disposed on-site and

points to the need for a better understanding of on-site activities.

In this plan we will use our methodology as previously described to estimate on-site management of hazardous wastes for the region. However, these figures should be viewed as rough estimates and call attention to the need for more definitive data.

Table II-4 summarizes the estimated quantities of hazardous waste managed on-site by generators in the nine Bay Area counties for 1986 based upon our methodology. A total of over 5 million tons are estimated. Contra Costa County with over 2 million tons and Santa Clara County with over 1 million tons, account for the majority of wastes estimated to be managed on-site. (The estimate for Solano County is based on the manifested waste tonnage number excluding the anomaly created by the manifesting of over 106,736 tons of non-metallic inorganic liquid waste from the Panoche site in 1986.)

II.5 Small Quantity Generators (SQGs)

Small quantity generators of hazardous waste include businesses and households that generate less than 1000 kg/month. In this section we will limit our discussion to businesses that generate less than 1000 kg/ month. Section II.6 will discuss household generated hazardous wastes.

Each county provided ABAG with an estimate of the amount of hazardous waste generated by SQGs. County staffs used the DHS "No Survey Method" to roughly quantify generation data for each individual county. This method is presented in the DHS Technical Reference Manual. Briefly, the "No Survey Method" estimates the types and volumes of waste generated by SQGs in a given industry. By identifying the number of businesses in each industrial classification and multiplying by a predetermined factor the county staffs were then able to estimate the volumes of waste produced by SQGs. Some counties also had other data sources for determining the small quantity generator contribution. San Mateo county's hazardous materials program database was utilized in addition to the "No Survey Method" to estimate the SQG waste stream.

The Contra Costa County plan states that SQG wastes are included in the manifest data and does not estimate SQG wastes based on the "No Survey Method." Our data suggests that this approach severely under estimates the contribution from SQGs. On a regional basis, we identified just over 2,000 SQG businessses from the manifest data for 1986. In Alameda county alone almost 7,000 SQG businesses where identified using the "No Survey Method" for 1986. This suggests that the manifested waste stream grossly under represents the volume of hazardous waste generated by SQGs. A survey conducted by ABAG and reported in 1985 (ABAG, 1985) concurs with this conclusion. Table II-5 shows the total estimated SQG waste generated in 1986 by county (excluding Contra Costa County). A total of 138,010 tons of SQG waste are estimated for the region.

II.6 Household Hazardous Wastes

Household hazardous wastes are defined according to a recent Environmental Protection Agency (EPA) report as:

> Solid wastes discarded from homes or similar sources as listed in 40 CFR 261.4(b) (1) that are either hazardous wastes as listed by EPA in 40 CFR, Parts 261.33 (e) or (f), or wastes that exhibit any of the following characteristics as defined in 40 CFR Parts 261.21 through 261.24: ignitability, corrosivity, reactivity and toxicity.

Containers that contain a residue of a hazardous material are also considered a hazardous waste. Typical household products that are potential hazardous wastes are listed in Table II-6.

Estimates of household hazardous waste generation rates are available from a number of sources. Two recently completed studies have looked at household hazardous waste generation rates: Rathje et al., 1987, and SRI, 1987. After reviewing these sources, we decided to use an adjusted Rathje, et al (1987) estimate of the contribution to the hazardous waste stream from households. We used 6.63 pounds/household/year. The estimate was adjusted as recommended by the DHS in their document entitled: Conversion of Garbage Project Hazardous Waste Groups to Tanner Waste Groups. The Rathje, et al,

estimate is based on a study of household refuse. The study team sorted household hazardous waste discarded in residential refuse over a two-month period in 1986 in Marin County. The DHS further categorized these wastes into the appropriate Tanner waste categories.

The estimate utilized here is likely to underrepresent actual disposal of household hazardous waste in municipal refuse for two major reasons. First, it does not account for household hazardous waste in self-haul loads to sanitary landfills. Second, it does not account for household hazardous waste collected at County sponsored household hazardous waste collection events. This estimate only represents the amount of household hazardous waste discarded into household garbage cans. At this time, however, we think that this is the best basis for estimating the actual household hazardous waste contribution to the total hazardous waste stream. As more data become available this estimate will probably increase.

Table II-7 shows the estimated total household hazardous waste generation figures by county for the region in 1986. Approximately 7,000 tons of household hazardous wastes are estimated for the region, with Santa Clara and Alameda Counties contributing the largest volumes: about 23% and 22%, respectively because of their larger population base.

II.7 Total Industrial and Household Hazardous Waste Stream

Discussion sections II.3, II.4, II.5 and II.6 presented partial data on the total regional generation of hazardous waste. We can now take each of these components and combine data to show the total industrial (including estimates for off-site, on-site and SQGs) and household contribution to the region's hazardous waste stream for 1986. Table II-8 shows the total estimated industrial waste stream for 1986 by county.

Table II-9 shows the contribution to the region's total industrial and household waste stream by each county. A total of 5,698,050 tons of hazardous waste is estimated for the region for 1986. The largest waste-generating counties are Contra Costa and Santa Clara, with 39% and 27% of the total contribution, respectively. San Mateo and Alameda counties

follow, contributing approximately 15% apiece. All the other counties contribute 2% or less to the regional total.

Figure II-1 displays the estimated percent distribution of off-site, on-site, SQG, and household hazardous wastes for the region in 1986.

II.8 Contaminated Sites

Hazardous waste is frequently generated during the clean-up of contaminated sites. This usually results when soils are removed for disposal in order to protect groundwater. Past management practices have relied upon removal and disposal but future practices are likely to use more on-site treatment and less disposal. Table II-10 presents estimates of contaminated soils manifested by generators in the Bay Area for 1986. Although contaminated soils may not represent all clean-up wastes manifested in the region for 1986, they do represent a large proportion of all clean-up related wastes. Over 38,800 tons (7%) of all manifested wastes in the region were generated from clean-up activities. Contra Costa and Marin County generators manifested over 12,000 tons apiece. In Marin County, contaminated soils represent 90% of the waste produced in that county in 1986.

II.9 Designated and Non-hazardous Wastes Shipped to Hazardous Waste Facilities

Designated hazardous wastes are classified as such by the DHS, the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Board (RWQCB). These wastes may include: sand from sandblasting, sludges from sewage treatment, ash from combustion processes, and wastes associated with oil and natural gas wells. Wastes such as ash from combustion sources and waste pre-treatment sludges from industrial sources may be reclassified in the future from designated to hazardous. Some of these are currently classified on a case-by-case basis.

The problem posed by designated wastes is that, while not classified as hazardous, they are sometimes not accepted at Class II waste repositories

due to lack of space and are then disposed of in Class I landfills filling much-needed space in hazardous waste disposal sites. Disposal facilities for designated wastes are limited, in part due to the lack of permitted Class II facilities and in part due to the reluctance of operators to incorporate design features required under regulations for sites accepting designated wastes.

Volume estimates of waste that are so classified are not included in this report.

II.10 Hazardous Waste Exports and Imports

As a region, Bay Area generators manifested and shipped off-site 551,506 tons of hazardous waste. Where are these wastes going? This section describes how wastes were handled in 1986 based on the DHS manifest data. Four major facilities treated and disposed of approximately 49% of the total manifested waste originating in California. This section will look specifically at the San Francisco Bay Area Region and how manifested hazardous wastes from the nine Bay Area counties were managed.

The data and information contained in this section have largely been culled from the California Partnership for Safe Hazardous Waste Management document entitled "Future Hazardous Waste Waste Management Capacity of Key Facilities in California" (Exceltech Inc., 1988a). We are grateful for this report; it has been most helpful.

The major off-site (manifested) waste generating counties in the San Francisco Bay Area have been defined previously in Section II.3. Table II-2A presents these data. In review, Contra Costa County generators produce the largest volume of off-site managed wastes, followed by Santa Clara, then Alameda and San Mateo Counties. The waste types and quantities are presented in Table II-1. The question that this section will try to answer is, "Where do generators in these counties send these wastes?"

The four major facilities discussed here are:

1) Chemical Waste Management's Kettleman Hills Facility (located in Kings County)

2) International Technology Corporation's Vine Hill/Baker Facility (Contra Costa County)

3) International Technology Corporation's Panoche Facility (Solano County)

4) Casmalia Resources Facility (Santa Barbara County)

Table II-11 presents the volume contribution from each of the nine Bay Area counties' generators to these facilities for 1986 and the percentage of the counties' total manifested waste flow to these facilities. Numbers presented in this table differ slightly from those presented previously since they were taken directly from the Exceltech Report. Approximately 64% of both Contra Costa and Santa Clara Counties' manifested waste flow entered these four major facilities. The largest volume contribution to a particular facility was 37,000 tons from Contra Costa County to the IT Panoche Facility.

IT announced in early 1988 that its two facilities, Vinehill/Baker and Panoche, will be closed. The facilities have not been accepting waste for some time: since December 1987 for the impoundments at Vine Hill/Baker and since 1986 for the Panoche facility. The full implications of this change in facility capacity for the region can not be assessed at this time. Since 20% of the region's off-site hazardous waste stream were managed between these two facilities, major changes in import and export of wastes in the region are likely.

II.11 1986 Waste Generation Summary

In conclusion, the San Francisco Bay Area generated an estimated 5,700,000 tons of industrial and household hazardous waste in 1986. Contra Costa County accounts for roughly 40% of this estimated total. The Bay Area produces about 140,000 tons of waste from SQGs; 450,000 tons of off-site manifested industrial waste; and about 5,100,000 tons managed on-site. About 7,000 tons are generated from households in the area.

Figure II-2 summarizes the contribution from each county for off-site, on-site, SQG and household hazardous wastes. Figure II-3 shows the estimated percent contribution from each county in the region.

The on-site managed contribution to the overall waste stream is estimated to be very large, about 90% of the total (see Figure II-1). We can expect that the proportion of waste managed on-site will increase in the future as economic and liability costs increase providing more incentive for development of on-site facilities. There is a need for better statistics on the volumes of hazardous waste generated and managed on-site. In the next chapter we will use the current generation information to predict future generation volumes.

TABLE II-1

QUANTITIES OF HAZARDOUS WASTES SHIPPED OFF-SITE BY GENERATORS
IN THE SAN FRANCISCO BAY REGION BY WASTE GROUP FOR 1986

WASTE GROUP	QUANTITY (tons/yr)	PERCENT
Waste Oil	87,144	15.8
Halogenated Solvents	4,616	0.8
Non-halogenated Solvents	33,312	6.0
Organic Liquids	16,338	3.0
Pesticides	3,179	0.6
PCB's & Dioxins	9,133	1.7
Oily Sludges	26,430	4.8
Halogenated Organic Sludges & Solids	2,920	0.5
Non-halogenated Organic Sludges & Solids	26,066	4.7
Dye & Paint Sludges & Resins	6,124	1.1
Metal-containing Sludges	6,574	1.2
Metal-containing Liquids	53,674	9.7
Cyanide & Metal Liquids	126	0.0
Non-metallic Inorganic Liquids	134,698	24.4
Non-metallic Inorganic Sludges	25,042	4.5
Contaminated Soil	38,860	7.0
Miscellaneous Wastes	77,273	14.0
TOTALS	551,506	100.0

TABLE II-2

QUANTITIES OF HAZARDOUS WASTE SHIPPED OFF-SITE BY GENERATORS IN THE SAN FRANCISCO BAY REGION FOR 1986 BY COUNTY OF ORIGIN

COUNTY	QUANTITY (tons/yr)	PERCENT
Alameda	66,150	12.0
Contra Costa	134,043	24.3
Marin	14,014	2.5
Napa	1,096	0.2
San Francisco	13,527	2.5
San Mateo	65,109	11.8
Santa Clara	88,335	16.0
Solano	131,171	23.8
Sonoma	38,061	6.9
TOTALS	551,506	100.0

TABLE II-2A

QUANTITIES OF HAZARDOUS WASTE SHIPPED OFF-SITE BY GENERATORS IN THE SAN FRANCISCO BAY REGION FOR 1986 BY COUNTY OF ORIGIN

COUNTY	QUANTITY (tons/yr)	PERCENT
Alameda	66,150	14.9
Contra Costa	134,043	30.1
Marin	14,014	3.2
Napa	1,096	0.2
San Francisco	13,527	3.0
San Mateo	65,109	14.6
Santa Clara	88,335	19.9
Solano*	24,435	5.5
Sonoma	38,061	8.6
TOTALS	444,770	100.0

* For Solano County we subtracted 106,736 tons of non-metallic inorganic liquids contributed by the IT Panoche facility in 1986.

TABLE II-3

QUANTITIES OF HAZARDOUS WASTE SHIPPED OFF-SITE BY GENERATORS
IN THE SAN FRANCISCO BAY REGION BY WASTE GROUP AND COUNTY OF ORIGIN FOR 1986, IN TONS

Waste Category	Alameda	C. Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Waste Oil	16,591	19,179	54	366	1,061	36,411	11,356	1,265	860	87,143
Halogenated Solvents	1,011	401	11	4	9	826	2,154	20	180	4,616
Non-Halogenated Solvents	6,679	1,683	109	14	488	10,352	12,064	146	1,777	33,312
Organic Liquids	1,735	2,720	55	4	2,286	473	8,944	70	51	16,338
Pesticides	7	705	1	0	1	2,439	27	0	0	3,180
PCB's & Dioxins	5,989	314	19	25	584	903	730	313	256	9,133
Oily Sludges	3,244	8,933	107	108	1,207	1,816	4,816	5,786	411	26,428
Halogenated Organic Sludges & Solids	35	2,436	0	0	1	14	432	0	1	2,919
Non-Halogenated Organic Sludges&Solids	2,478	8,404	502	43	387	1,670	2,523	9,942	117	26,066
Dye and Paint Sludges & Resins	2,758	223	42	9	134	1,098	1,678	132	50	6,124
Metal-containing Sludges	1,537	418	2	354	8	11	4,244	0	0	6,574
Metal-containing Liquids	6,949	28,788	19	0	284	1,071	14,906	1,039	618	53,674
Cyanide & Metal Liquids	37	0	7	0	0	7	38	30	7	126
Non-Metallic Inorganic Liquids	2,957	5,560	5	0	1,500	1,031	8,866	107,099	7,681	134,699
Non-Metallic Inorganic Sludges	661	57	0	0	1	1,519	1,124	672	21,008	25,042
Contaminated Soil	4,360	12,967	12,669	122	302	2,366	5,394	363	316	38,859
Miscellaneous	9,122	41,255	412	47	5,274	3,102	9,039	4,294	4,728	77,273
Totals	66,150	134,043	14,014	1,096	13,527	65,109	88,335	131,171	38,061	551,506

TABLE II-4

ESTIMATED ON-SITE* MANAGEMENT OF WASTE GENERATED IN THE SAN FRANCISCO BAY REGION FOR 1986 BY COUNTY OF ORIGIN, IN TONS

County	Quantity (tons/yr)	Percent
Alameda	595,350	11.6
Contra Costa	2,100,007	41.1
Marin	3,287	0.1
Napa	0	0
San Francisco	24,048	0.5
San Mateo	865,020	16.9
Santa Clara	1,383,915	27.1
Solano**	91,922	1.8
Sonoma	44,680	0.9
TOTALS	5,108,229	100.0

* On-site wastes are estimated as a percentage of off-site manifested wastes. See methodology discussion in Section II.4.

** Solano County manifested waste data does not include the one-time generation of 106,736 tons of non-metallic inorganic liquid waste: Table II-2A is the basis for this table.

TABLE II-5

ESTIMATED SMALL QUANTITY WASTE GENERATION IN THE SAN FRANCISCO BAY REGION FOR 1986 BY COUNTY OF ORIGIN, IN TONS

County	Quantity (tons/yr)	Percent*
Alameda	32,080	23.2
Contra Costa	N/A	N/A*
Marin	6,722	4.9
Napa	10,293	7.5
San Francisco	14,967	10.8
San Mateo	2,470**	1.8
Santa Clara	52,059	37.7
Solano	4,254	3.1
Sonoma	15,165	11.0
TOTALS	138,010	100.0

* Percentages of small quantity waste generation by county presented here are incomplete due to the assumption made by Contra Costa County that SQG wastes are included in the manifest data. (See discussion in Section II.5.)

** San Mateo County states that 80% of the small quantity waste generation was manifested based on independent county records; thus the figure presented here is corrected to prevent double counting of these wastes (in the manifest system and by the "no survey method"). The SQG total given by the county is 12,345 tons of which only 2,470 tons are not accounted by the manifest data. Since it was not possible to identify specific waste groups, etc. for these wastes, we have only included those SQG wastes that are not covered by the manifest system in this table.

TABLE II-6
COMMON HOUSEHOLD HAZARDOUS WASTES

Pesticides	Household Cleaners
Garden	Floor
Insect Sprays	Furniture
Fertilizer/pesticide mixtures	Rug
Herbicides	Upholstery
Fungicides (eg. wood preservative)	Window
	Laundry (eg. bleach, spot remover)
Polish	
Metal	Automotive Products
Automobile	Motor Oil
Furniture	Transmission fluid
Floor	Hydraulic fluid
Shoe	Carburetor cleaner
Leather	Radiator cleaner
	Antifreeze
	Engine cleaner
Adhesives and Sealants	Waste oil in containers
Caulk	Lubricant
Solvent-based adhesives	Used oil filters
Batteries	
Household (alkaline)	Paints and Coatings
Rechargeable	Solvent and thinner
Automotive	Oil based paint
Other	Water-based paint
	Varnish and Stain
	Spray and Auto paint

Source: SRI International, Waste Characterization Study: Assessment of Recyclable and Hazardous Components, Second Semi-Annual Progress Report, August 1987

TABLE II-7

ESTIMATED HOUSEHOLD HAZARDOUS WASTE GENERATION IN THE SAN FRANCISCO BAY REGION FOR 1986 BY COUNTY OF ORIGIN

County	Number of Households*	Quantity** (tons/yr)	Percent
Alameda	459,312	1,523	21.6
Contra Costa	269,823	894	12.7
Marin	93,634	310	4.4
Napa	39,567	131	1.9
San Francisco	310,041	1,028	14.6
San Mateo	234,558	778	11.0
Santa Clara	491,610	1,630	23.2
Solano	93,400	310	4.4
Sonoma	131,922	437	6.2
TOTALS	2,123,867	7,041	100.0

* From California Department of Finance estimates for 1986

** Calculations are based on an estimate of 6.63 lb/household/yr. (See discussion in Section II.6.)

TABLE II-8

ESTIMATED INDUSTRIAL HAZARDOUS WASTE GENERATED BY COUNTY
FOR THE SAN FRANCISCO BAY REGION FOR 1986, IN TONS

County	Industrial			Total	Percent
	Off-site Manifested	On-site Estimate	SQG Estimate		
Alameda	66,150	595,350	32,080	693,580	12.2
Contra Costa	134,043	2,100,007	N/A	2,234,050	39.3
Marin	14,014	3,287	6,722	24,023	0.4
Napa	1,096	0	10,293	11,389	0.2
San Francisco	13,527	24,048	14,967	52,542	0.9
San Mateo	65,109	865,020	2,470	932,599	16.4
Santa Clara	88,335	1,383,915	52,059	1,524,309	26.8
Solano	24,435	91,922	4,254	120,611	2.1
Sonoma	38,061	44,680	15,165	97,906	1.7
TOTALS	444,770	5,108,229	138,010	5,691,009	100.0

This table is a compilation of Tables II-2A, II-4, and II-5.

TABLE II-9

ESTIMATED TOTAL HAZARDOUS WASTE GENERATION IN THE SAN FRANCISCO BAY REGION BY COUNTY OF ORIGIN FOR 1986, IN TONS

County	Industrial (tons)	Household (tons)	Total (tons)	Percent
Alameda	693,580	1,523	695,103	12.2
Contra Costa	2,234,050	894	2,234,944	39.2
Marin	24,023	310	24,334	0.4
Napa	11,389	131	11,520	0.2
San Francisco	52,542	1,028	53,570	1.0
San Mateo	932,599	778	933,376	16.4
Santa Clara	1,524,309	1,630	1,525,939	26.8
Solano	120,611	310	120,921	2.1
Sonoma	97,906	437	98,344	1.7
TOTALS	5,691,009	7,041	5,698,050	100.0

This table is a compilation of Tables II-7 and II-8.

TABLE II-10

CONTAMINATED SOILS SHIPPED OFF-SITE BY BAY AREA GENERATORS
BY COUNTY OF ORIGIN FOR 1986

COUNTY	QUANTITY (tons/yr)	PERCENT
Alameda	4360	11.2
Contra Costa	12967	33.4
Marin	12669	32.6
Napa	122	0.3
San Francisco	302	0.8
San Mateo	2366	6.1
Santa Clara	5394	13.9
Solano	363	0.9
Sonoma	316	0.8
TOTALS	38859	100.0

Table II-11: USE OF KEY FACILITIES BY SAN FRANCISCO BAY AREA COUNTY GENERATORS IN 1986 (tons)*

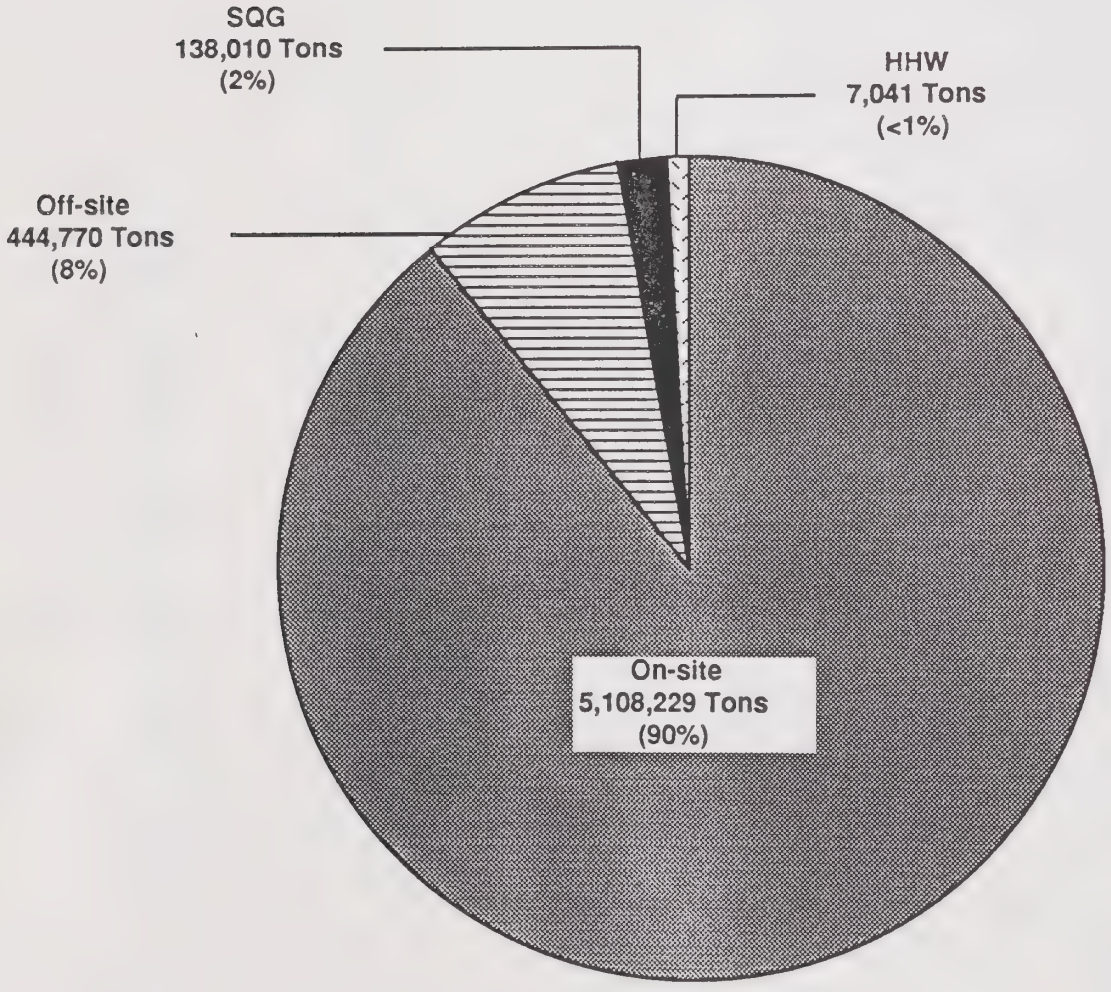
FACILITY:	ALAMEDA	CONTRA COSTA	MARIN	NAPA	SAN FRANCISCO	SAN MATEO	SANTA CLARA	SOLANO**	SONOMA	REGION
Kettleman Hills	7,719	28,777	1,684	236	1,187	5,940	13,498	3,820	143	63,004
IT Vine Hill/Baker	10,056	16,718	57	56	3,772	5,221	22,652	891	3,428	62,851
IT Panoche	4,901	37,200	13	192	823	699	4,284	1,407	980	50,499
Casmalia Resources	3,363	3,072	104	30	913	1,784	9,352	616	144	19,378
TOTAL WASTE FLOW TO KEY FACILITIES	26,039	85,767	1,858	514	6,695	13,644	49,786	6,734	4,695	195,732
TOTAL COUNTY GENERATION	66,153	134,032	13,989	1,219	13,803	65,097	77,298	64,106	38,061	473,758
% OF COUNTY'S TOTAL WASTE FLOW ENTERING KEY FACILITIES	39.4%	64.0%	13.3%	42.2%	48.5%	21.0%	64.4%	10.5%	12.3%	41.3%
% OF COUNTY'S WASTE TO EACH FACILITY										
Kettleman Hills	11.7%	21.5%	12.0%	19.4%	8.6%	9.1%	17.5%	6.0%	.4%	13.3%
IT Vine Hill/Baker	15.2%	12.5%	.4%	4.6%	27.3%	8.0%	29.3%	1.4%	9.0%	13.3%
IT Panoche	7.4%	27.8%	.1%	15.8%	6.0%	1.1%	5.5%	2.2%	2.6%	10.7%
Casmalia Resources	5.1%	2.3%	.7%	2.5%	6.6%	2.7%	12.1%	1.0%	.4%	4.1%

*Based on data from EXCELTECH,INC, 1988

**Excludes IT-Inter-Facility Transfers of 94,605 tons non-metallic liquid waste transferred from IT Panoche (Solano County) to IT Vine Hill/Baker (Contra Costa County)

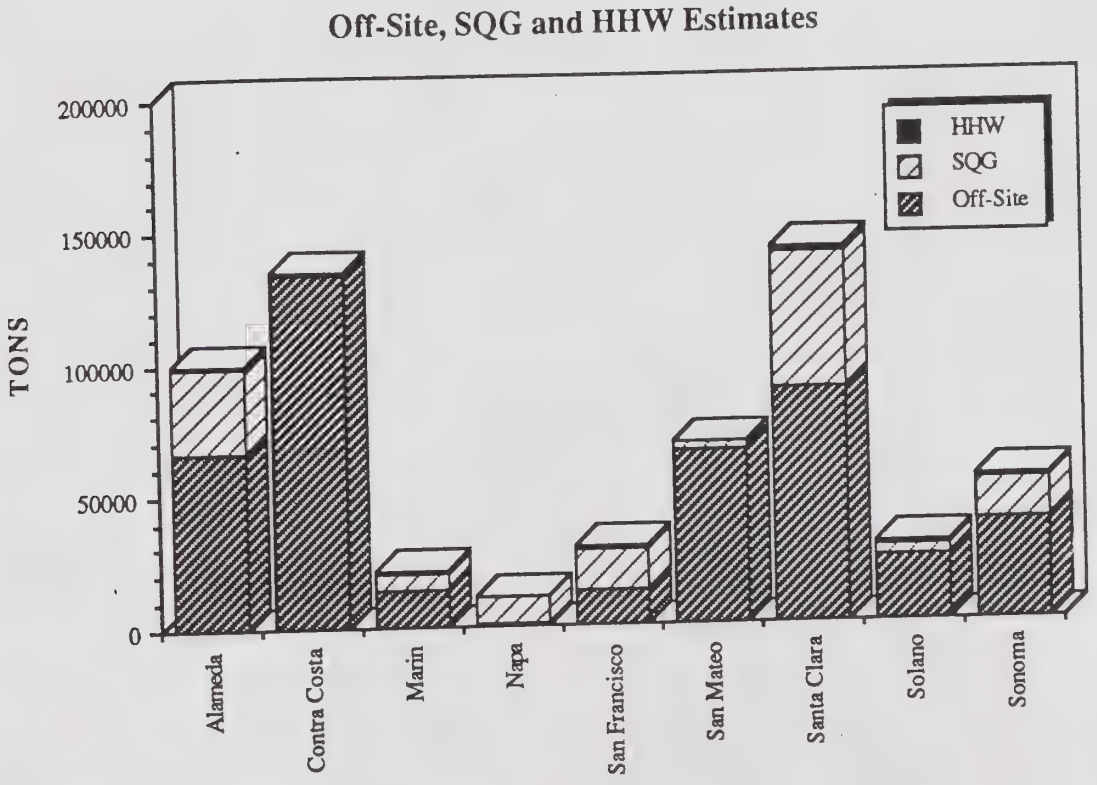
Figure II-1

Generation of Off-site, On-site
Small Quantity Generators (SQG)
and Household Hazardous Waste (HHW)
in the San Francisco Bay Region for 1986



Total = 5,698,050 tons

Figure II-2
Estimated Off-Site, On-Site, Small Quantity Generator (SQG) and Household Hazardous Waste (HHW) Generation Contribution in the San Francisco Bay Region by County of Origin for 1986



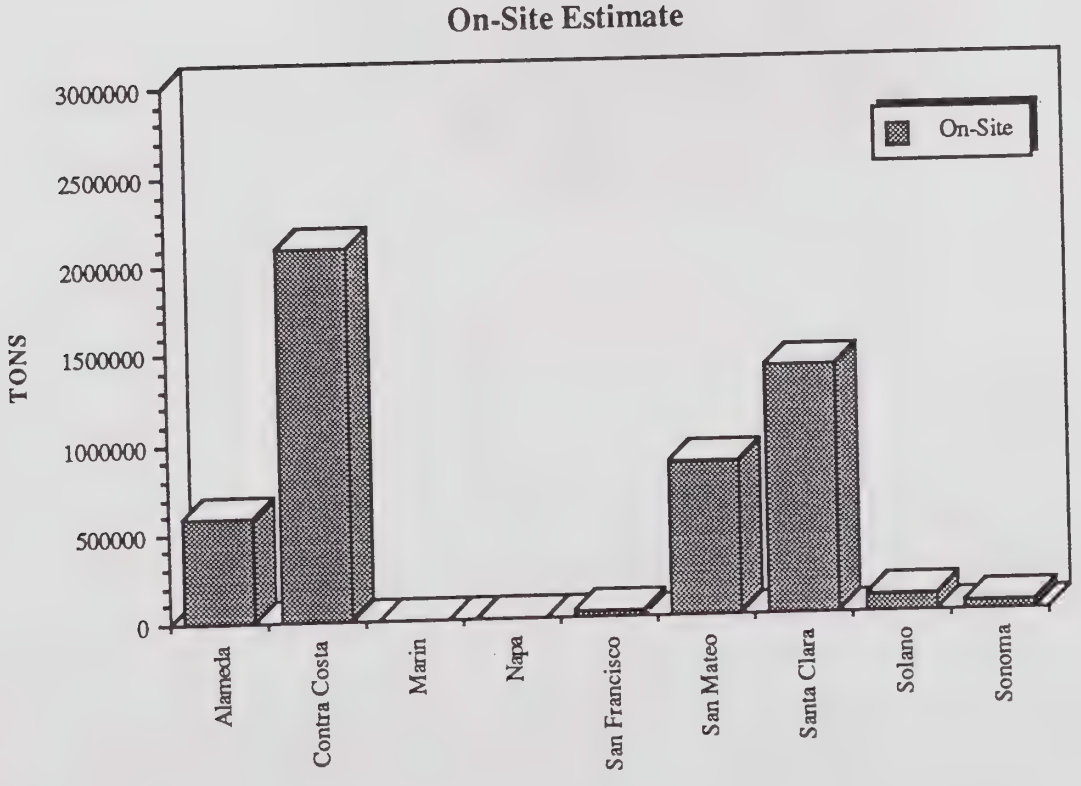
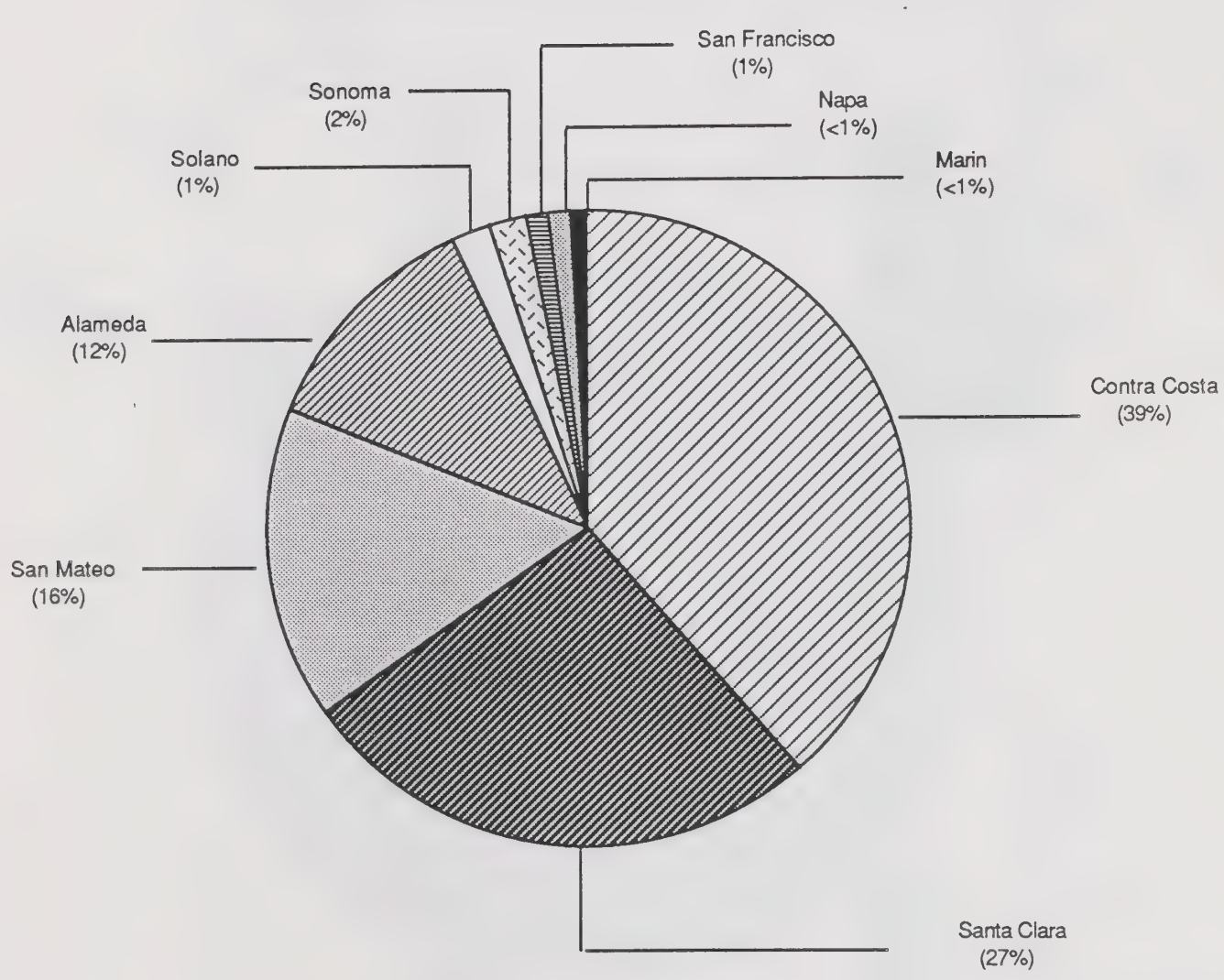


Figure II-3

Estimated Percent of Total* Hazardous Waste Generation in the San Francisco Bay Area by County of Origin for 1986



*Includes off-site, on-site, SQG and household hazardous waste generation estimates except for Contra Costa County which does not incorporate an estimate for SQGs.

III. FUTURE HAZARDOUS WASTE GENERATION ESTIMATES

III.1 Introduction

To plan for future management of hazardous wastes, future generation rates must be systematically estimated. Since economic activity generates the vast majority of hazardous waste in our environment, any planning activity to estimate future hazardous waste production requires estimating economic growth, as well as information on the impacts of present and future technology on hazardous waste generation. ABAG has developed a methodology to estimate future hazardous waste streams that are a result of economic activity in the nine counties of the San Francisco Bay Area Region. These forecasts are limited to industry and do not include estimates of hazardous wastes that households generate. We developed a separate method to estimate the contribution to the overall hazardous waste picture by households. These are presented in Section III.6. This chapter discusses the waste level forecasts and presents estimated hazardous waste generation data for the region in the year 2000.

III.2 Hazardous Waste Projections for Off-site Managed Wastes: Sources, Methods and Limitations

ABAG staff has developed a model to forecast hazardous waste generation levels by both large and small quantity industrial generators based on industry-specific economic output levels. This model was applied to manifested wastes only. Technical Memoranda Numbers 2 and 4 contained in Appendix 5 provide a complete description of the forecast methodology. Briefly, the method uses economic activity projections by county and industry sector for the year 2000 to predict waste generation levels for that year. The model assumes that the relationship between waste generation

and economic output level in 1986 remains constant throughout the forecast period. The following calculation was performed for each sector on a county-by-county basis:

$$\frac{\text{waste produced in 1986 (tons)}}{\text{output in 1985 (constant 1982 \$)}} \times \text{output in 2000 (constant 1982 \$)} = \text{waste produced in 2000 (tons)}$$

Table III-1 summarizes the projections data by waste group for the year 2000. The first column in Table III-1 shows the manifested waste generation data for 1986 "the 1986 base case" used to produce the projections. This "base case" estimate represents all manifested waste during 1986 except for wastes generated from site clean-ups. The second column "no reduction" estimates hazardous waste production without accounting for any waste minimization potential. None of the estimates presented here include small quantity generators which disposed of unmanifested waste. Small quantity generator projections will be discussed in Section III.3. Projections data on individual counties are available in Appendix 6. By the end of the century, manifested industrial hazardous waste production is estimated to total 546,741 tons. This estimate assumes that waste will be generated at the same rate per unit of output as in 1986, so no technology changes or waste reduction levels were incorporated into this estimate.

Waste reduction efforts that generators were practicing in 1986 will influence the forecast but any waste reduction efforts (i.e., technology changes, recycling, improved housekeeping) implemented following 1986 are not accounted for in these projections. This scenario for year 2000 estimates will be referred to as the "2000 no reduction base case." However, since waste reduction is a central element of this planning process, we have incorporated waste reduction estimates into the second stage of our forecast. This method of incorporating waste reduction estimates is described below.

III.3 Incorporation of Waste Reduction Potential into the Year 2000 Estimates

We have presented a methodology for estimating manifested waste generation figures for the year 2000. As previously described, these figures do not incorporate any estimates of future waste reduction potential. Predicting waste reduction levels is extremely difficult because they can be influenced by many factors. Most often, these factors are economic and regulatory pressures. The price of treating or disposing of waste affects the behavior of industry. As the cost of treatment or disposal increases, economic incentives to reduce hazardous waste in the production process increases. Correspondingly, regulations place legal constraints on the production of hazardous wastes. The combination of the two factors could have substantial impacts on hazardous waste generation in the production process.

Local governments can provide incentives for waste reduction to their local generators. The Ventura County experience (Ventura County, 1987) is an excellent example of the impact local government can have on waste reduction efforts. In Ventura, a 70% reduction of volume of hazardous waste going to land disposal was realized over a two-year period. The Ventura example is very specific: a small number of generators were responsible for a large percentage of this overall decrease. The San Francisco Bay Area Regional Hazardous Waste Management Plan encourages local governments to become involved in similar efforts. But the question still remains: "How much waste reduction is likely to occur in the San Francisco Bay Region between now and 2000?"

We examined several methods in an attempt to predict the overall impact of waste reduction efforts on the volume of waste produced in the region. Industry representatives were interviewed by county staffs to try to estimate reduction figures. Santa Clara County staff was able to develop a set of potentially useful information, although the data from this county were very specific to defense and semiconductor industries, and were not generally applicable to other industries. The range of reduction estimates was from 10% to 100% on a process-specific basis. The one hundred percent reduction estimate is accomplished by substitution of either a product or raw materials for non-hazardous components.

ABAG staff and the projections subcommittee studied the DHS Hazardous Waste Minimization Workbook to determine how applicable these numbers might be for the Region. The four-digit Standard Industrial Classification (SIC) groupings proved to be too specific, since our data were coded only with two-digit SIC codes, and the number of four-digit SIC industries identified by the DHS Hazardous Waste Minimization Workbook was limited. In an attempt to use these data in some way, we looked at the percentage contribution of each of the four-digit codes to the overall two-digit groupings in each county. For all counties except Contra Costa, the contribution to the overall two-digit SIC code grouping from the more specific four-digit group identified in the workbook was very small. Based on this information, we decided that the estimates in the workbook were not applicable to the region as a whole. In the case of Contra Costa County, its staff stated that local industry representatives did not think that the DHS estimates were representative of their situation, primarily because one of the processes described in the DHS document (under SIC code group 2911) is not practiced by Contra Costa County refineries. Thus the projections subcommittee thought that even in this case these percentages did not appear applicable.

Although the DHS Hazardous Waste Minimization Workbook was determined not to be useful on a county-by-county or industrial-sector-specific basis, reduction estimates presented did give a general sense of waste reduction potentials. Waste reduction potentials outlined in the workbook range from a minimum of 5% for SIC code group 2491 (wood preserving) in the waste category of sludge to a maximum of 63% for metal parts cleaning processes using acid or alkaline cleaners.

In an effort to estimate a waste reduction range for the region the projections subcommittee decided that the 5% reduction figure appeared too low to use as a minimum. It was generally believed that economic incentives alone would increase the minimum waste reduction per unit of output by most industries to at least 10%. The 63% figure appeared too high, since it would require five pounds of waste to be reduced for every eight pounds of waste currently generated. We believe that a reduction of this magnitude is an unrealistically high expectation in most industries. Based on these data and lengthy discussions, it was determined that a reasonable range for an

industrial waste reduction estimate per unit of output for the region would be a minimum of 10% and a maximum of 40% over the forecast period. We anticipate that new hazardous waste-generating businesses will be able to reduce waste production more than older established businesses. As better tools to estimate future reduction potential and as actual reduction levels become available, this information should be reviewed and incorporated into the planning efforts.

These reduction estimates were then applied uniformly to the forecast estimates for the year 2000. Tables III-1 through III-3 show waste stream estimates incorporating the reduction factors for each of the seventeen waste groups and each of the nine industrial sectors for each county in the region. Off-site managed hazardous waste production in the region is estimated to range from 328,044 tons to 492,067 tons in the year 2000. These same reduction estimates (10% and 40%) were applied to all industrial waste generation projections as described below for on-site managed (Section III.4) and small quantity generators' wastes (Section III.5).

III.4 Wastes Managed On-site

We employed the same methodology to estimate the volume of waste managed on-site in 2000 as utilized for the 1986 estimate (see discussion in Section II.4). Briefly, we applied county specific proportions to our projection of off-site managed (manifested) wastes for the year 2000. Our methodology for estimating on-site treatment and disposal has limited application. Our review of available data indicates that more research is needed to fully understand on-site hazardous waste management activities. Table III-4 shows estimates for on-site managed wastes by county for 2000 using three reduction scenarios. On-site hazardous waste management volumes for the year 2000 are estimated to range from 3,672,489 tons to 5,508,734 tons.

III.5 Small Quanitity Generator (SQG) Projections

Each county except Contra Costa provided ABAG with an estimate of the amount of hazardous waste generated by SQGs. County staffs (or their consultants)

projected generation quantities to the year 2000. The county data were used to estimate the contribution to the industrial hazardous waste stream from SQGs. These data are presented in Table III-5 by waste groups and in Table III-6 by county and for the region. Both tables display data for the three reduction scenarios. We estimate 122,189 tons to 183,284 tons to be generated by SQGs in 2000. Waste oil is the largest waste group comprising over 70% (89,008 to 133,512 tons) of the total SQG waste contribution.

III.6 Household Hazardous Waste Projections

We used the same methodology as we utilized for 1986 to project the contribution to the hazardous waste stream from households for 2000. We estimated that 6.63 pounds per household per year was generated and multiplied that volume by household projection figures for the year 2000. Table III-7 shows these estimates by county. Santa Clara County is predicted to maintain the largest contribution with just over 23% of the total regional household hazardous waste stream.

III.7 Summary: Projection Estimates for 2000

Table III-8 shows the industrial waste generation projections for 2000 for off-site, on-site and SQGs. To calculate the total industrial waste contribution we used the SQG projection for waste oil and did not add in the off-site manifested waste oil projection. We selected this approach to define the total industrial waste stream projection because we felt double-counting was considerable in the two projection figures (SQG and off-site) for waste oil. Two counties were exceptions to this rule: Contra Costa and San Mateo. For Contra Costa we used the manifested waste oil projections since no SQG waste oil figure was available. For San Mateo County we combined both the SQG and manifest waste oil projection to estimate the industrial total.

Table III-9 summarizes industrial and household contribution for each county and the region with the reduction scenarios. A total of between 4,069,563 and 6,100,099 tons is projected to be generated in the year 2000. Contra Costa County is projected to make the largest contribution to the regional total at about 36%. However, note that Contra Costa County does not include a separate estimate for SQG waste so, in fact, their contribution may even be larger. Santa Clara County follows at about 32% to the regional hazardous waste total. San Mateo and Alameda County are each estimated to contribute about 13% followed by the rest of the region's counties with contributions of less than or 3% apiece.

TABLE III-1

1986 BASE CASE AND HAZARDOUS WASTE GENERATION PROJECTIONS FOR OFF-SITE MANAGED WASTES, BY WASTE GROUP IN THE SAN FRANCISCO BAY REGION FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

WASTE GROUP	1986 Base*	ESTIMATED TONS		
		No Reduction	10% Reduction	40% Reduction
Waste Oil	86,176	108,663	97,796	65,198
Halogenated Solvents	4,537	7,908	7,117	4,745
Non-halogenated Solvents	32,688	55,301	49,771	33,181
Organic Liquids	15,824	28,041	25,237	16,825
Pesticides	3,169	5,056	4,551	3,034
PCBs and Dioxins	8,707	11,932	10,739	7,159
Oily Sludges	25,135	43,953	39,558	26,372
Halogenated Organic Sludges & Solids	2,905	4,571	4,114	2,742
Non-halogenated Organic Sludges & Solids	15,472	21,509	19,358	12,905
Dye & Paint Sludges & Resins	6,007	8,470	7,632	5,082
Metal-Containing Sludges	6,528	10,815	9,734	6,489
Metal-Containing Liquids	35,150	53,044	47,739	31,826
Cyanide & Metal Liquids	120	168	151	101
Non-metallic Inorganic Liquids	27,585	42,389	38,150	25,433
Non-metallic Inorganic Sludges	25,041	38,427	34,584	23,056
Contaminated Soil	0	0	0	0
Miscellaneous Wastes	62,771	106,494	95,845	63,897
TOTALS	361,286	546,741	492,067	328,044

* These numbers represent the base case upon which the projections were calculated. They exclude manifested one-time generators and clean-up wastes, including contaminated soils, and asbestos.

TABLE III-2

HAZARDOUS WASTE GENERATION PROJECTIONS FOR OFF-SITE MANAGED WASTES BY INDUSTRIAL SECTOR IN THE SAN FRANCISCO BAY REGION FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

INDUSTRIAL SECTOR	ESTIMATED TONS		
	No Reduction	10% Reduction	40% Reduction
Unclassified	3,354	3,019	2,012
Agriculture & Mining	8	7	5
Construction	626	563	376
Manufacturing	356,610	320,949	213,966
Transport, Communication, Utilities	139,328	125,395	83,597
Wholesale Trade	5,008	4,507	3,005
Retail Trade	5,032	4,529	3,019
Finance, Insurance, & Real Estate	1,045	941	627
Services	27,256	24,530	16,354
Government	8,477	7,629	5,086
TOTALS	546,744	492,070	328,046

TABLE III-3

PROJECTED QUANTITIES OF HAZARDOUS WASTE SHIPPED OFF-SITE BY GENERATORS IN THE SAN FRANCISCO BAY REGION BY COUNTY OF ORIGIN FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

COUNTY	ESTIMATED TONS		
	No Reduction	10% Reduction	40% Reduction
Alameda	84,672	76,205	50,803
Contra Costa	158,889	143,000	95,333
Marin	1,821	1,639	1,093
Napa	1,028	925	617
San Francisco	10,750	9,675	6,450
San Mateo	71,870	64,683	43,122
Santa Clara	127,513	114,762	76,508
Solano	33,908	30,517	20,345
Sonoma	56,290	50,661	33,774
TOTALS	546,741	492,067	328,044

* From ABAG Projections 87

TABLE III-4

PROJECTED QUANTITIES OF HAZARDOUS WASTE MANAGED ON-SITE IN THE SAN FRANCISCO BAY REGION BY COUNTY OF ORIGIN FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

COUNTY	ESTIMATED TONS		
	No Reduction	10% Reduction	40% Reduction
Alameda	762,046	685,841	457,228
Contra Costa	2,285,557	2,057,001	1,371,334
Marin	416	374	250
Napa	0	0	0
San Francisco	19,028	17,126	11,417
San Mateo	899,346	809,412	539,608
Santa Clara	1,962,864	1,766,578	1,177,718
Solano	126,793	114,114	76,076
Sonoma	64,764	58,287	38,858
TOTALS	6,120,815	5,508,734	3,672,489

TABLE III-5

HAZARDOUS WASTE GENERATION PROJECTIONS FOR SMALL QUANTITY GENERATORS BY WASTE GROUP IN THE SAN FRANCISCO BAY REGION FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

WASTE GROUP	ESTIMATED TONS		
	No Reduction	10% Reduction	40% Reduction
Waste Oil	148,347	133,512	89,008
Halogenated Solvents	3,222	2,900	1,933
Non-halogenated Solvents	6,815	6,133	4,089
Organic Liquids	2,565	2,309	1,539
Pesticides	1,315	1,183	789
PCBs and Dioxins	135	122	81
Oily Sludges	0	0	0
Halogenated Organic Sludges & Solids	159	143	95
Non-halogenated Organic Sludges & Solids	1,587	1,428	952
Dye & Paint Sludges & Resins	2,091	1,882	1,255
Metal-Containing Liquids	1,404	1,264	843
Metal-Containing Sludges	1,310	1,179	786
Cyanide & Metal Liquids	387	348	232
Non-metallic Inorganic Liquids	7,997	7,197	4,798
Non-metallic Inorganic Sludges	7	6	4
Contaminated Soil	0	0	0
Miscellaneous Wastes	26,308	23,677	15,785
TOTALS	203,649	183,284	122,189

TABLE III-6

HAZARDOUS WASTE GENERATION PROJECTIONS FOR SMALL QUANTITY GENERATORS*
BY COUNTY OF ORIGIN IN THE SAN FRANCISCO BAY REGION
FOR THE YEAR 2000, USING THREE REDUCTION SCENARIOS

COUNTY	ESTIMATED TONS		
	No Reduction	10% Reduction	40% Reduction
Alameda	50,242	45,218	30,145
Contra Costa*	N/A	N/A	N/A
Marin	8,949	8,054	5,369
Napa	13,432	12,089	8,059
San Francisco	17,978	16,180	10,787
San Mateo	2,447	2,203	1,469
Santa Clara	71,520	64,368	42,912
Solano	9,045	8,141	5,427
Sonoma	30,035	27,032	18,021
TOTALS	203,648	183,284	122,189

* SQG estimates were not available from Contra Costa County.

TABLE III-7

HOUSEHOLD HAZARDOUS WASTE GENERATION PROJECTIONS
BY COUNTY FOR THE YEAR 2000

COUNTY	NUMBER OF HOUSEHOLDS*	QUANTITY (tons/yr)	PERCENT
Alameda	539,320	1,788	21.1
Contra Costa	354,720	1,176	13.8
Marin	107,990	358	4.2
Napa	50,500	167	2.0
San Francisco	324,400	1,075	12.7
San Mateo	265,490	880	10.4
Santa Clara	595,470	1,974	23.2
Solano	144,490	479	5.6
Sonoma	178,810	593	7.0
TOTALS	2,561,190	8,490	100.0

* From ABAG Projections 87

TABLE III-8

INDUSTRIAL HAZARDOUS WASTE GENERATION PROJECTIONS IN THE SAN FRANCISCO BAY REGION BY COUNTY OF ORIGIN FOR THE YEAR 2000, IN TONS

COUNTY	INDUSTRIAL			TOTAL	PERCENT
	Off-site Manifested*	On-site Estimate	SQG Estimate		
Alameda	60,754	762,050	50,242	873,046	12.9
Contra Costa	128,697	2,285,557	N/A	2,414,254	35.7
Marin	1,774	416	8,949	11,139	0.2
Napa	597	0	13,432	14,029	0.2
San Francisco	9,491	19,028	17,978	46,497	0.7
San Mateo	43,673	899,346	2,447	945,466	14.0
Santa Clara	112,672	1,962,864	71,520	2,147,056	31.7
Solano	31,206	126,793	9,045	167,044	2.5
Sonoma	55,124	64,764	30,035	149,923	2.2
TOTALS	443,988	6,120,815	203,648	6,768,455	100.0

* This table is a compilation of data from Tables III-3, III-4, and III-6 with two adjustments. Waste oil quantities were subtracted from the manifested waste stream total for all counties except Contra Costa to avoid double counting of this waste group in the industrial total (only the Small Quantity Waste oil estimate is included in the industrial total).

The second adjustment is for San Mateo County; the county projected waste oil total was separated into its manifested and SQG component and included in the total industrial projection from both categories.

TABLE III-9

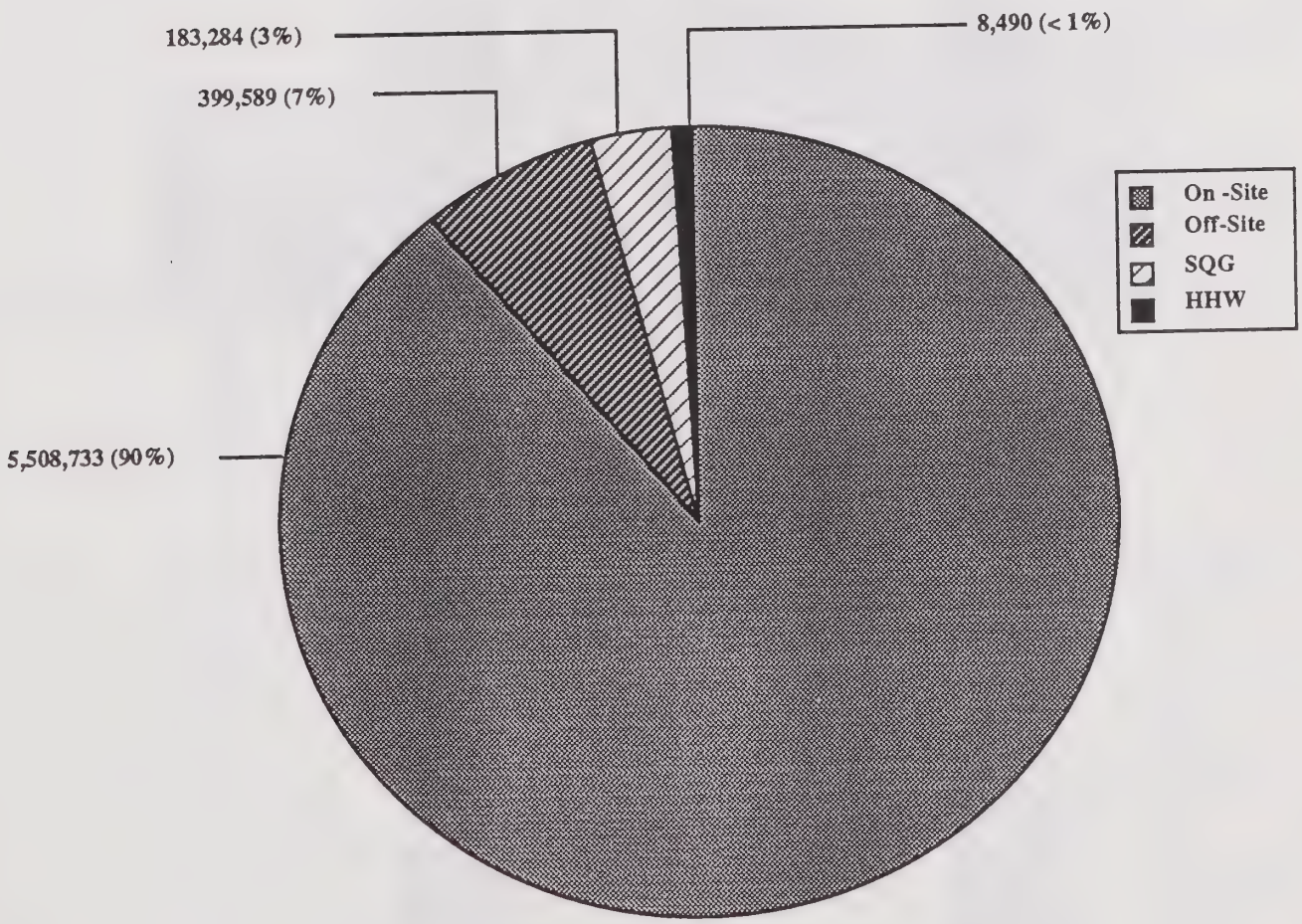
HAZARDOUS WASTE GENERATION PROJECTIONS BY INDUSTRIAL AND HOUSEHOLD CONTRIBUTIONS IN THE SAN FRANCISCO BAY REGION FOR THE YEAR 2000 BY COUNTY OF ORIGIN

COUNTY	INDUSTRIAL (tons)			HOUSEHOLD (tons)	TOTAL* (tons)			PERCENT
	No Reduction	Less 10%	Less 40%		No Reduction	Less 10%	Less 40%	
Alameda	873,046	785,741	523,827	1,788	874,834	787,529	525,615	12.9
Contra Costa	2,414,254	2,172,829	1,448,552	1,176	2,415,430	2,174,005	1,449,728	35.7
Marin	11,139	10,025	6,683	358	11,497	10,383	7,041	0.2
Napa	14,029	12,626	8,417	167	14,196	12,793	8,584	0.2
San Francisco	46,497	41,848	27,898	1,075	47,572	42,923	28,973	0.7
San Mateo	945,466	850,920	567,280	880	946,346	851,800	568,160	14.0
Santa Clara	2,147,056	1,932,350	1,288,234	1,974	2,149,030	1,934,324	1,290,208	31.7
Solano	167,044	150,340	100,227	479	167,523	150,819	100,706	2.5
Sonoma	149,923	134,930	89,954	593	150,516	135,523	90,547	2.2
TOTALS	6,768,455	6,091,609	4,061,073	8,490	6,776,945	6,100,099	4,069,563	100.0

* The total figures include reduction estimates for the industrial contribution only, household wastes are not reduced.

This table is a compilation of data from Tables III-7 and III-8.

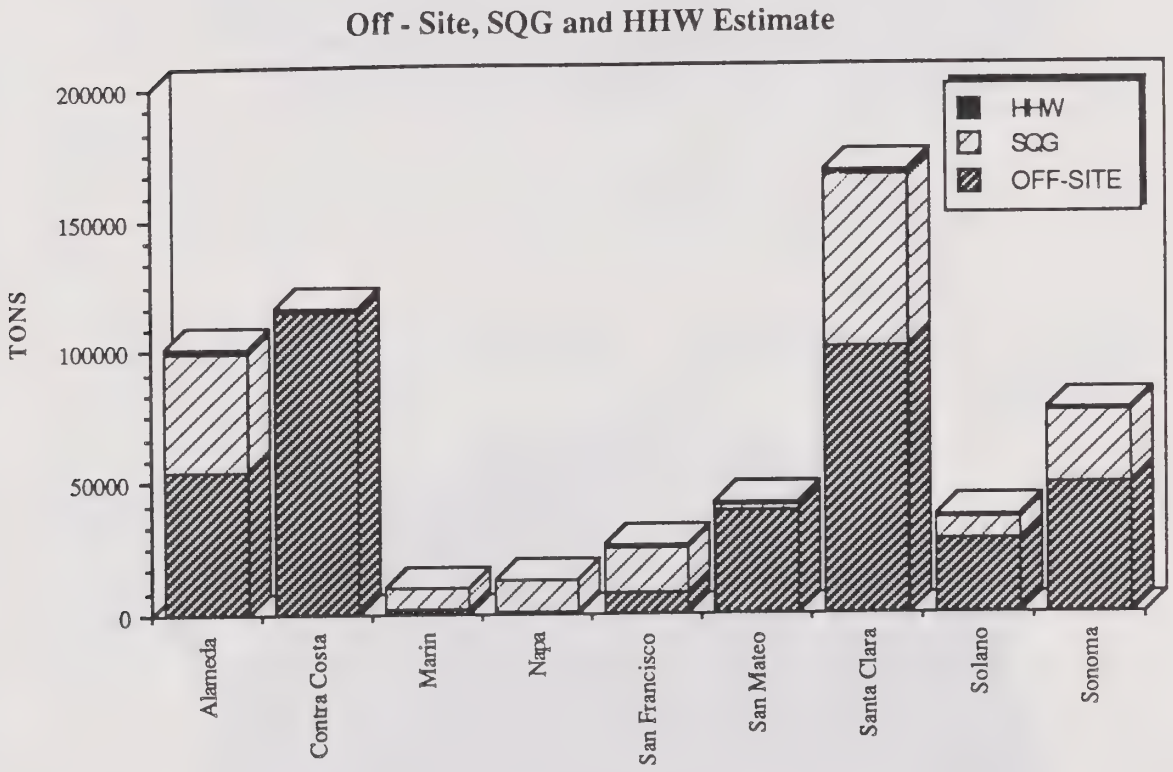
Figure III - 1
Projected Percent Distribution of Off-Site, On-Site, SQG and Household Hazardous Waste Generation Contribution in the San Francisco Bay Region for Year 2000, Using 10% Reduction Scenario for the Industrial Waste Stream



Total = 6,100,099 Tons

Figure III - 2
Estimated Off-Site, On-Site, Small Quantity Generator (SQG) and Household Hazardous Waste (HHW) Generation Contribution in the San Francisco Bay Region by County of Origin for 2000

(10% Reduction Scenario)



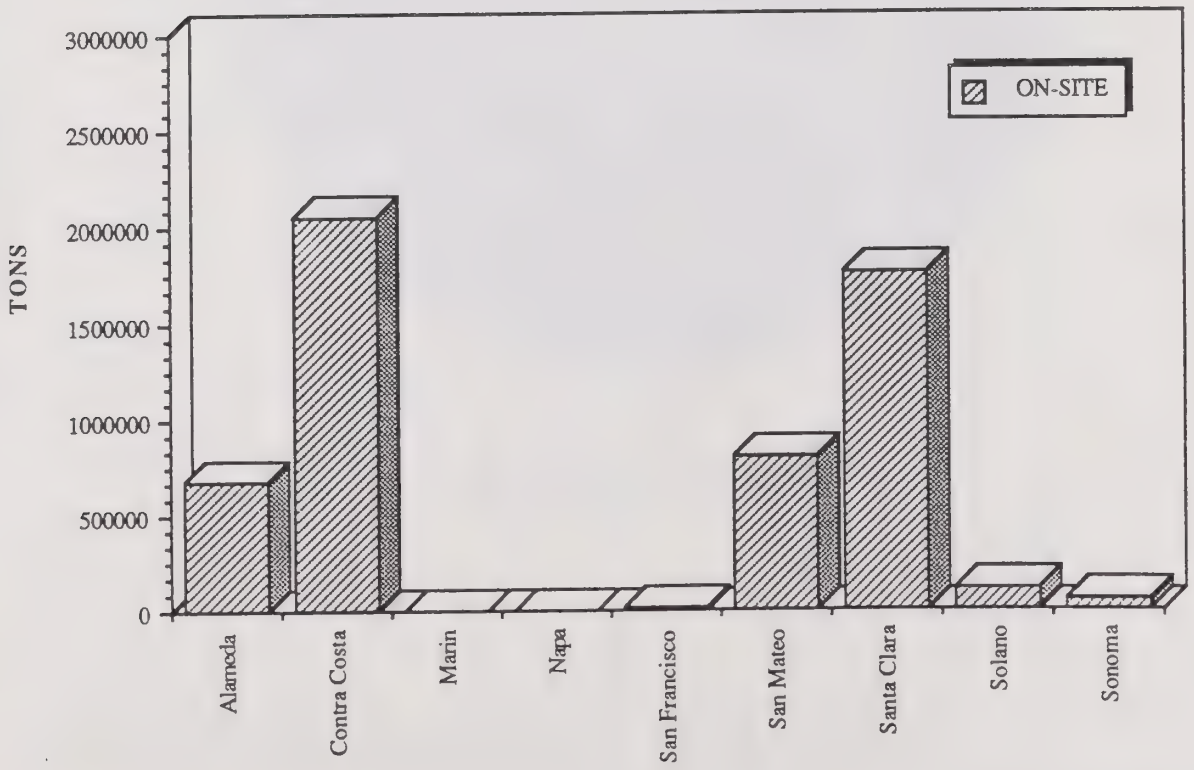
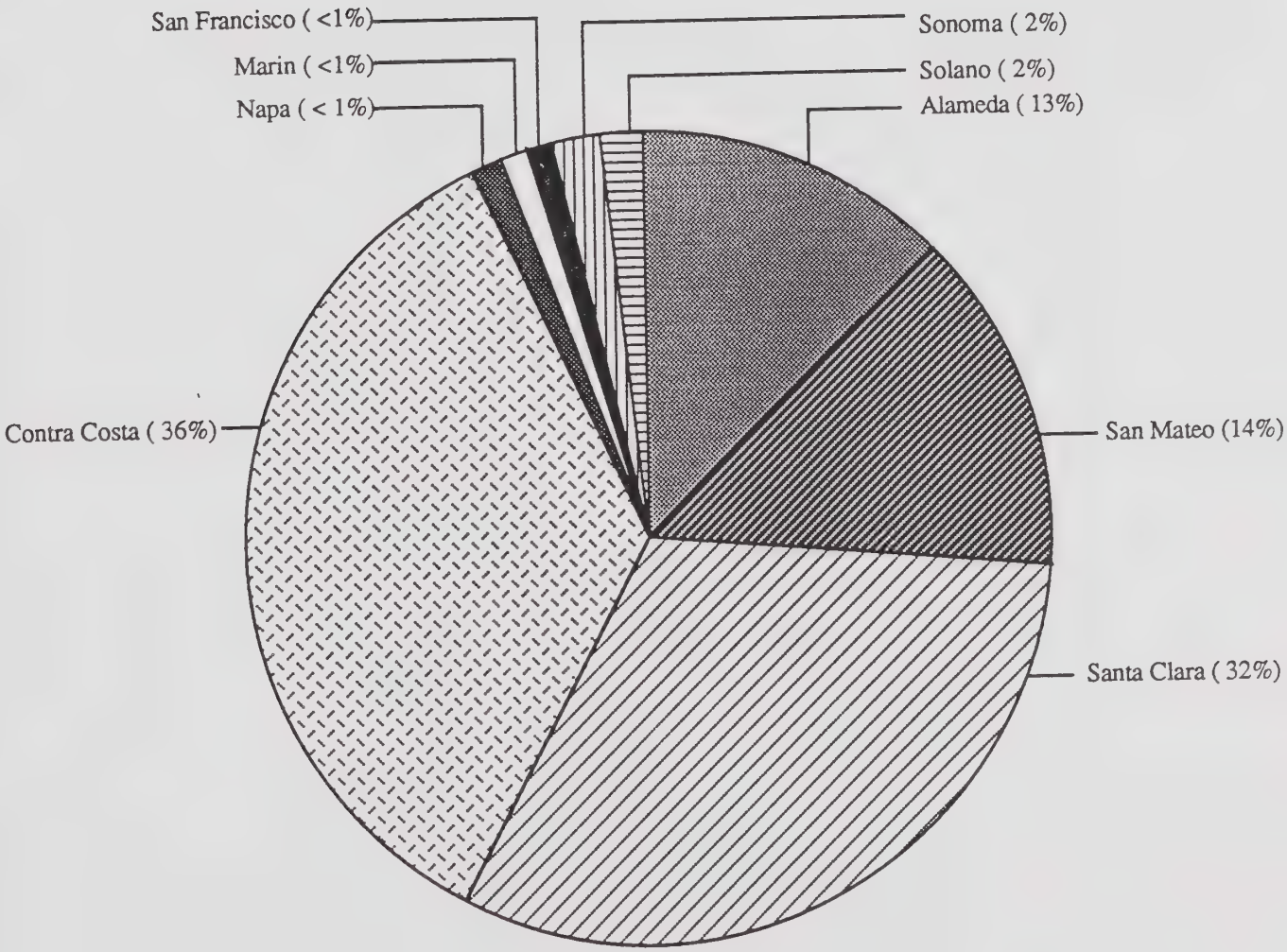


Figure III - 3
Projected Percent of Total* Hazardous Waste Generation in the San Francisco Bay Area by County of Origin for Year 2000 using the 10% Reduction Scenario



* Includes Off-Site, On-Site, SQG and household hazardous waste generation estimates except for Contra Costa County which does not include estimate for SQGs.

IV. EXISTING OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES

IV.1 Introduction

One of the key objectives of the hazardous waste management plan is to analyze the requirements for treatment and disposal of these materials, then plan how future wastes will be managed. To determine the additional off-site treatment capacities that will be needed, it is necessary to investigate characteristics of current hazardous waste management facilities. This chapter describes the current off-site hazardous waste management facility capacity within the region.

IV.2 Existing Facilities for Off-site Wastes

Although many of these facilities receive wastes from outside the counties in which they are located (and outside the region as well), a necessary categorization of these is by their location. In this section, a facility inventory by county and a regional summary will be presented.

Alameda

As described in Chapter II, generators in Alameda County produced over 66,000 tons of manifested off-site hazardous wastes in 1986. From the information regarding inter-county transportation, there was a net export of about 80% of this total (over 52,700 tons) outside the county. The result of this activity meant that Alameda must have treated the remaining wastes (approximately 13,400 tons) within the county.

Although the types of wastes treated locally have not been specified in the county's draft plan, the facilities within Alameda County that managed at least this amount of waste are identified as oil and solvent recyclers, and

treatment of aqueous metals solutions. It appears that these wastes are the only types that are currently treated at off-site facilities within the county. From information supplied by the state Department of Health Services and the county, there are six major facilities located in the county. These include Evergreen Oil, Waste Oil Recovery, All American Oil, Safety Kleen, Pfizer, and California Oil Recyclers (which relocated here from San Mateo County in 1987).

Information on the capacities of these facilities is incomplete. However, available information indicates that Evergreen Oil has a capacity of 50,400 tons for oil recovery, Pfizer can neutralize 36,500 tons per year, and California Oil Recyclers can treat 25,200 tons for oil recovery. Capacities for the other facilities listed above are not available, but both All American Oil and Waste Oil Recovery recycled over 5,000 tons each in 1986. The Pfizer facility only utilized 12% of its capacity in 1986, while Evergreen Oil used 58%, and California Oil Recyclers used 98% of its available capacity. California Oil Recyclers also has a long-term storage capacity of about 1,300 tons.

Contra Costa

From the data presented so far, Contra Costa County generated over 134,000 tons of manifested waste that were transported off-site in 1986. Approximately 82% of these were exported, leaving approximately 24,000 tons within the county. Wastes remaining in the county included metal-containing liquids, non-metallic inorganic liquids, waste oil, inorganic solid wastes, and non-halogenated organic sludges and solids as well as non-halogenated solvents and organic liquids. These seven waste types account for over 81% of the quantity treated in-county at off-site facilities.

In addition to the wastes remaining in the county, about 204,400 tons were imported into Contra Costa County in 1986, including a one-time transfer of 94,600 tons of contaminated rainwater. IT Panoche, the facility responsible for this collected run-off, has made necessary improvements in their run-off collection system and is now closed, so no further transfers like this one

will be made. The net result is an import total of 109,800 tons for that year. Of this total, non-metallic inorganic liquids, organic liquids, metal-containing liquids, non-metallic inorganic sludges, and miscellaneous wastes make up 75% of the imports (86,600 tons).

Several hazardous waste treatment, storage, and/or disposal facilities located in Contra Costa County handled wastes in 1986. The largest of these is the IT complex at Vine Hill in Martinez. About 128,400 tons of waste were processed there, excluding the one-time transfer from Panoche discussed above. One-sixth of this total originated in Contra Costa County, with an additional 45% from other Bay Area counties. The remaining 39% came from outside the region. Vine Hill has been an important facility for local and regional wastes for more than 30 years. Due to its planned permanent closure by IT, its effective capacities are now zero.

Imperial West Chemical in Pittsburg is permitted for treatment (generally recycling) and storage. Most of the wastes are generated by electronic etching processes and by the U.S. Steel plant. For some reason, these do not show up in the DHS manifest system for 1986. Its recycling capacity is 42,000 tons, only 65% of which was used in 1986. This treatment facility no longer receives off-site wastes, so its capacity is not included in our projected capacity determination in Chapter V.

Two other commercial facilities which until recently accepted hazardous wastes are no longer taking wastes: West Contra Costa Sanitary Landfill (since 1985) and Acme Fill (since 1987). Great Western Chemical used to treat, store, and dispose of small quantities of recyclable wastes, but has eliminated its treatment activities and now acts only as a storage and transfer station. Bay Area Environmental is a small transfer station which plans on treating about 70,000 tons per year of various hazardous wastes. So far, however, it has not begun to do so.

Marin

Manifested off-site wastes in Marin County during 1986 totaled 14,000 tons; however, about 11,600 tons of this were considered one-time clean-up wastes, which are not expected to continue in the future. Fully 84% of the generators in the county are small enough to be classified as "small quantity generators". Since small quantity generators accounted for three times the adjusted manifested total (excluding one-time clean-up wastes), the majority of hazardous wastes estimated to be generated in the county were not accounted for. It is expected that a significant quantity of untreated wastes were disposed of illegally--in landfills, sewers, or on land.

Contaminated soil was by far the largest type of waste generated in the county in 1986 (two-thirds of all wastes), with non-halogenated solvents and oily sludges the two major ongoing waste streams. Of the total off-site wastes reported, all but 16 tons were exported. With 16 tons of waste imported, a total of 32 tons of waste were dealt with in the county in 1986. All this was delivered to one photo processing reclaimer.

No off-site treatment facilities operate in the county, but one small storage and transfer facility is operated by the County Agricultural Commissioner (capacity: 440 gallons per year).

Napa

Napa County generated about 1,100 tons of waste in 1986, 69% of which was waste oil and metal-containing sludges. Two waste-producing companies have since moved from the county, so that only about 720 tons of waste would be treated in the future. Only one large waste generator is located in the county (a tannery), producing about 460 tons of hazardous waste.

The remaining wastes, both manifested and non-manifested, are generated by numerous small quantity generators. When these estimated wastes are included, 1986 hazardous waste generation in the county totaled nearly

11,400 tons; more than 67% of this amount was waste oil. Solvents, pesticides, metal-containing and dye and paint sludges, non-metallic inorganic liquids, and miscellaneous wastes comprised the bulk of the remaining waste stream.

Only one facility manages hazardous wastes in Napa County. Refineries Service, Inc. was a commercial transfer station in 1986, handling 356 tons -- generally of waste oil. In 1987 it halted transfer operations, thus this facilitie's waste management capacity is expected to be reduced to zero over time. Although Napa imported 360 tons of waste oil in 1986 (which was included in the manifests), the transfer station has halted that operation. It is expected that no waste imports will occur in the future. The quantity of exported waste was less than 90 tons, and only about 17 tons was finally disposed of within the county.

No off-site treatment, storage, or disposal facilities exist in the county with the exception of waste oil storage at a refuse landfill site.

San Francisco

San Francisco's manifested waste stream consisted of about 13,500 tons, the largest category of which was asbestos clean-up waste. Organic liquids, non-metallic inorganic liquids, oily sludges, and waste oil account for 64% of the ongoing waste stream. Small quantity generators account for about half the off-site manifested total, with waste oil the largest waste type.

According to the Department of Health Services' records, six facilities within the city/county accepted wastes in 1986. Only three of these remain in operation in early 1988. One is no longer operating, another moved out of the county, and another does not manage hazardous waste in San Francisco. Two of the three remaining facilities have restricted operations--one recycles only empty drums, and the other only transports waste. The remaining facility, H & H Ship Service, is permitted to process waste oil, tank bottom wastes, unspecified aqueous solutions, and unspecified solvent

mixtures. It treated 45,600 tons by oil recovery in 1986, 60% of its capacity of 76,000 tons.

San Mateo

The total manifested hazardous waste stream managed in San Mateo County in 1986, including net imports, was just over 65,000 tons. A substantial amount of waste oil was imported into the county, for treatment by California Oil Recyclers and Romic Chemical, making this by far the largest treated waste group. The other category of significance was non-halogenated solvents; together these two groups accounted for about 72% of the treated wastes in San Mateo. According to the County Plan, only 15 firms generate 81% of the county-manifested hazardous wastes (excluding imports).

The two aforementioned facilities were the major treatment plants in the county, and in the region, in 1986. In 1987, California Oil Recyclers relocated to Alameda County, leaving Romic Chemical as the remaining facility in San Mateo County. Capacities given in the projected capacity table (See Chpater V) come directly from Romic. The corporation is a major recycler of organic compounds, and operates a substantial recovery facility in San Mateo County. Solvent recovery capacity is now 20,000 tons per year, but the company wants to increase this to 80,000 tons; the fuel recovery system has the same current capacity, and wants to expand to 50,000 tons. About 35% of this capacity was used in 1986. A small storage capacity is also available at the facility.

Santa Clara

More than 88,000 tons of hazardous wastes were manifested off-site in 1986. With small quantity generation estimated at 52,000 tons and household hazardous waste at 1,600 tons, there was a need for treatment of nearly 142,000 tons of hazardous waste generated in the county in that year.

The largest treatment facility in Santa Clara County is Solvent Service in San Jose, which treated over 7,000 tons of hazardous wastes in 1986. Three

other facilities treated several hundred tons at minimum: Safety Kleen, Safe-Way Chemical, and South Bay Chemical. At present, no specific capacity data is available for individual facilities. It is not expected that these facilities will be significantly expanded over the next decade.

Solano

Approximately 131,100 tons of manifested off-site hazardous waste was generated in Solano County in 1986. However, an unusual situation accounted for much of this total. Due to uncovered holding ponds at IT Panoche, an excessive quantity (106,700 tons) of tainted rainwater was collected containing low concentrations of non-metallic inorganic compounds. Since these wastes will not contribute to future capacity needs they are not included in calculations to determine future capacity requirements.

To the remaining 24,400 tons waste was added the estimated production from small quantity generators (4,200 tons) and households (300 tons). The sum of these indicates that 28,900 tons was produced needing off-site management. The four largest waste groups of this total were non-halogenated organic sludges & solids, oily sludges, miscellaneous wastes, and waste oil--accounting for about 87% of this total.

One of the major facilities (described below)--IT Panoche--was the largest receptor of hazardous waste of three facilities in Solano County in 1986, accepting about 77,000 tons. The vast majority of these wastes originated in 23 other California counties. However, this facility is no longer accepting wastes and is in the process of being permanently shut down. Montezuma Hills facility, also operated by IT Corporation, consists of nine evaporation ponds and three land-farming spread areas. Its use permit expired in 1987, so it is also not currently accepting wastes. Finally, Aqua-Clear Farms, Inc. is a small facility exclusively for the disposal of drilling muds, using both land-farming and ponds in their operation.

Sonoma

Sonoma County produced an estimated 53,600 tons of hazardous waste managed off-site in 1986. Small quantity generators contributed about 40% of this total.

The largest type of hazardous waste generated in Sonoma County in 1986 was produced by the Geysers geothermal facility and consisted of sulfur sludge, representing 55% of the total off-site manifested waste stream (included under the category of non-metallic inorganic sludges). Because this waste type requires stabilization as the best treatment technology, this was the largest quantity of waste to be managed by any generalized treatment method for Sonoma county. Thus, stabilization is the required treatment method for about 68% of all current manifested wastes in Sonoma County.

When both manifested and small quantity generator wastes are included, the four largest waste groups (non-metallic inorganic sludges, non-metallic inorganic liquids, waste oil, and miscellaneous wastes) accounted for nearly 92% of the total.

Transportation of wastes to off-site facilities outside of Sonoma county is the main method of waste management within the county. All manifested wastes are treated outside the county. Two transfer stations make up the Sonoma County waste management system, and a significant portion of the manifested waste stream passes through them. Safety Kleen manages small quantity generators and transports solvents out of the county. It handled about 4.5% of the manifested waste stream in 1986. Gardner's Drain Oil is the other transfer station in the county, transporting used oils out-of-county for recycling. Less than 1% of the manifested county wastes pass through this facility.

IV.3 Key Off-site Hazardous Waste Management Facilities

Over the past couple of decades, there have been four major hazardous waste facilities that managed a large portion of the region's and the state's manifested off-site wastes. The situation is changing, but a brief description of each follows.

Kettleman Hills, Kings County: A large treatment, storage, and disposal facility, Kettleman Hills is owned and operated by Chemical Waste Management, Inc. Wastes can be stored in containers, tanks, and surface impoundments, with a capacity of about 1,300 55-gallon drums. A cyanide treatment unit is in place (its capacity is 6,000 tons per year); surface impoundments treat liquid organic, acid, and metal wastes (system capacity is 64,000 tons); a PCB flushing unit separates this compound from various types of equipment; and a stabilization unit treats radioactive wastes as well as solidifies some liquid wastes. Disposal is generally done in one landfill, accepting solidified wastes. Its capacity of just over 2 million cubic yards will be exhausted in 5-7 years. The company has submitted plans to substantially increase the drum storage capacity to 8500 drums, expand surface impoundment capacity to 180,000 tons, add over 19 million cubic yards of landfill capacity, and increase the stabilization unit capacity--all over the next four years. Kettleman Hills also desires a major incinerator at this facility, but planning is in its initial stages only.

Casmalia Resources, Santa Barbara County: This facility has been operating since 1973, and includes surface impoundments (closed to new liquid wastes), landfills (open to solidified wastes), and an acid neutralization unit handling 36,000 tons per year. Landfill life expectancy is currently 10 years (1.9 million cubic yards). Plans include expanding landfill capacity to 4.9 million cubic yards and increasing acid neutralizing capabilities to 144,000 tons per year. An existing wet air oxidation unit for treating liquid pesticide and cyanide wastes, as well as non-halogenated organic wastes, is shut down, but Casmalia is attempting to reopen it.

IT Panoche, Solano County: International Technology has owned and operated this facility since 1968. Surface impoundments, waste piles, and landfills are the major treatment and storage techniques at the site. However, it stopped accepting waste in December 1986, and the company plans on cleaning up, closing, and selling the site.

IT Vine Hill/Baker, Contra Costa County: Also owned and run by International Technology Corporation (since 1967), Vine Hill/Baker consists of two sites utilizing several treatment methods in addition to storage and disposal. Processes include oxidation for treating cyanide, sulfide, and organic chemicals; reduction for chromium; precipitation for removing heavy metals from solution; neutralization for acids and alkalines; separation for solids/oil/water; air/nitrogen stripping; sludge de-watering; and liquid waste reduction. A small incinerator (size: 23 MMBTU/hour) is used to burn liquid wastes. An oil recovery plant has a capacity of 40,000 tons per year. Seventy-eight acres of surface impoundments are used for the evaporation of waste effluent. Recent news (March, 1988) indicates that the company is also planning on shutting down this facility; its last wastes were probably received in December 1987.

IV.4 Conclusion

For many years, the region has been dependent on the four major hazardous waste facilities described above. Since the two Bay Area facilities are effectively closed the remaining two facilities, located outside of the region, will likely become major management components for Bay Area generated wastes. The nine-county Bay Area has a number of smaller facilities contributing to the capacity needs of the area. Substantial oil and solvent recovery capacity is provided by several facilities.

In the next chapter we will estimate the need for future capacity to treat and dispose of off-site managed wastes generated within the region.

V. OFF-SITE HAZARDOUS WASTE MANAGEMENT CAPACITY NEEDS ANALYSIS FOR THE YEAR 2000

V.1 Introduction

One of the major objectives of this planning effort is to assess the future need for off-site hazardous waste management facilities. In Chapter III we estimated future generation rates for the year 2000 for off-site managed, on-site managed, SQG and household hazardous wastes. In this chapter we will use these projections to estimate facility needs in the year 2000. This "needs analysis" will address capacity requirements for off-site managed wastes including manifested wastes, SQG waste and household hazardous waste; on-site capacity needs will not be addressed.

In order to analyze the need for off-site management facility capacity we needed to convert waste group projections into suitable treatment method categories. We used the generalized treatment categorization as recommended in the DHS Technical Reference Manual. Thus, each waste group was converted to the primary treatment method as suggested by DHS. In order to predict the volume of residuals left by each method (ultimately resulting in the capacity requirement for residuals repository facilities) we applied the following factors to the generalized treatment methods:

Generalized Treatment Method	Residual Factor
Aqueous Treatment - Organic	10%
Aqueous Treatment - Metals/Neutralization	50%
Incineration	10%
Solvent Recovery	20%
Oil Recovery	20%
Other Recycling	10%
Stabilization	120%

In the Technical Reference Manual from the State Department of Health Services, no residuals factor was given for the treatment category of "Other Recycling." After some discussion, we decided that 10% was reasonable, given other factors and the nature of recycling as treatment. The DHS representative agreed that this was considered a "reasonable" factor to use. A full discussion of treatment methodologies is covered in Technical Memo No. 5 contained in Appendix 5.

Assessing the need for future off-site waste management facility capacity is fraught with difficulties. Future needs can be impacted by a variety of unknown factors that could dramatically alter the actual situation. One of the major factors in assessing future needs is the accuracy of the generation projections data. We feel the generation projections (as presented in Chapter III) are the best available data and that the assumptions incorporated into the methodology are reasonable. These data form the basis of this needs assessment.

The following sections present the results of the regional needs determination.

V.2 Projected Off-site Capacity Requirements

Tables V-1, V-2, and V-3 display estimated capacity requirements for manifested, SQG and household hazardous wastes, respectively for the year 2000. Individual county contributions are also shown. In Table V-3, household hazardous wastes included in the miscellaneous waste category from Chapter III are categorized into the residuals category for the needs analysis. It was not possible to further categorize these wastes.

The data are combined in Table V-4 yielding the total regional estimated off-site capacity requirement. When we compiled the projections data on manifested, SQG and household wastes, several adjustments where made in order to present a more accurate estimate of capacity requirements. These adjustments are explained here and are noted on the table. We recognized that waste oil was the major component of the small quantity generator waste

stream, and that it was very likely that double counting of this waste type would occur if we summed the waste oil component from both the manifested and SQG estimates. Our solution to this dilemma was to use the waste oil SQG estimate only, except in two cases. For Contra Costa County, no SQG estimate was given in the county plan so we used the manifested waste oil figure. In the San Mateo County plan, adjustments were made to the data set which significantly lowered the waste oil total for the 1986 off-site manifested wastes; the projection for this waste was correspondingly low. The SQG waste oil total figure also appeared low. The combined industrial total used in their plan appeared to be at least more accurate than the SQG portion used alone. Thus we used both estimates: the manifested and SQG components of the waste oil group and added them together for the total waste oil contribution from San Mateo County.

We estimate a total maximum treatment capacity requirement of just over 900,000 tons in the year 2000. It is estimated that the region will need 233,000 tons of residual repository capacity in that year. The largest treatment method needed will be oil recovery.

The capacity determinations presented in this section do not incorporate estimates of future waste reduction. A discussion of the impact of waste reduction is included in Section V.4.

Table V-5 shows the capacity requirement by county and shows the percent of capacity for the region that each county is expected to require. The table indicates that Santa Clara county will require the largest capacity. However, note that for Contra Costa county there is no capacity estimate for SQG waste. In Santa Clara county the SQG estimate increases the capacity requirement by 86,000 tons. Thus it is possible, if not likely, that Contra Costa county will be the county with the largest capacity requirement once the impact of SQG wastes have been realized.

V.3 Projected Off-site Treatment Capacity

Table V-6, V-7 and V-8 display the projected off-site treatment capacity by county and for the region in the year 2000. These data are directly culled

from the draft county plans. Table V-6 shows expected capacity based on existing facilities that are expected to be operational in 2000. Table V-7 shows proposed facilities. Table V-8 combines proposed and existing facilities to show expected treatment capacities. For only one category, residuals repository, is zero capacity estimated when we consider both proposed and existing facility capacity. Based on total capacity available from current facilities (Table V-6) the regional capacity is estimated at 316,434 tons. If all proposed facilities become active, the region will have an estimated capacity of 504,000 tons. For oil recovery we estimate a minimum of 151,000 ton capacity region-wide. The important analysis is whether our projected capacity will meet our projected requirements. This will be addressed in the next section.

V.4 Off-site Facility Capacity Needs Determination

Tables V-9 through V-12 display the facility capacity needs determination for the region. These tables present capacity surpluses and deficits based upon the difference between estimated capacity requirements and projected treatment capacity. The needs capacity for the year 2000 was determined based upon a simple comparison between the required capacity and the available capacity as estimated. The required capacity is the total waste generated -- as projected -- reorganized into treatment categories. The available capacity is based on the expected facilities which would exist in that year, using current facility capacity plus that which has been proposed. Thus, the net capacity needed is just the difference between the estimated facility capacity and the treatment capacity required for the projected quantity of hazardous wastes.

Table V-9 estimates needed capacity based only upon existing facilities and Table V-10 combines existing and proposed facilities. These tables use the no reduction scenario while Tables V-11 and V-12 show need based upon a 10% and 40% reduction scenario. The reduction scenarios are fully described in Chapter III, Section III.3.

We estimate that there will be at least a 10% reduction of waste per unit of output for the industrial contribution to the total waste stream. Although

we believe the 40% reduction scenario is possible, to achieve this will require a major undertaking on the part of industry and government.

In reviewing the 10% and 40% reduction scenario needs assessments based on existing facilities (Table V-11) we see that overall for the region we estimate a deficit in capacity of between 508,000 tons (10% reduction) to 237,000 tons (40% reduction). When we include proposed facilities we see an overall deficit of between 320,000 (10% reduction) and 48,000 (40% reduction) tons. Clearly, a substantial difference exists depending upon the industrial waste reduction levels actually achieved and whether proposed facilities become operational. The largest deficit is estimated for residuals repositories. We estimate the deficit to be between 210,000 tons (at 10% reduction) and 142,000 tons (at 40% reduction). The next largest deficit is in the other recycling category with estimated deficits ranging from 114,000 to 69,000 tons.

V.5 Conclusion

The regional estimated need for off-site treatment capacity will be substantially influenced by waste minimization practices and actual capacity available. In studying the estimates presented here we can see major differences in need depending upon how much waste production is reduced. However, even with our maximum reduction estimate of 40% per unit of output over all hazardous waste generating industries three categories of treatment still show substantial deficits even when we include proposed capacity. These are residuals repositories, other recycling and stabilization. Two treatment categories show surpluses even at the 10% level of reduction based upon only existing facility capacity; these are solvent recovery and aqueous organic treatment.

In the next chapter we will examine criteria for siting new off-site hazardous waste management facilities.

TABLE V-1

PROJECTED OFF-SITE CAPACITY REQUIREMENTS FOR THE YEAR 2000 BY COUNTY OF ORIGIN
IN THE SAN FRANCISCO BAY REGION--NO REDUCTION SCENARIO

MANIFESTED WASTES ONLY

Treatment Method	Alameda	C.Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Organic	18	1,153	0	0	10	3,893	34	0	0	5,108
Aqueous Metals	16,244	32,891	30	0	2,429	2,993	33,657	3,369	13,047	104,660
Incineration	15,060	16,003	783	47	1,074	4,560	7,211	1,208	536	46,482
Solvent Recovery	13,064	3,111	215	55	599	17,511	25,247	293	3,114	63,209
Oil Recovery	28,287	42,863	171	540	2,598	36,844	22,414	17,716	1,183	152,616
Other Recycling	6,632	49,224	621	0	4,002	3,306	29,643	3,286	6,978	103,692
Stabilization	5,366	13,645	1	384	39	2,763	9,308	8,037	31,431	70,974
Residuals	25,002	48,652	234	585	2,409	16,859	41,219	15,380	45,852	196,192
TOTALS	109,673	207,542	2,055	1,611	13,160	88,729	168,733	49,289	102,141	742,933

TABLE V-2

PROJECTED OFF-SITE CAPACITY REQUIREMENTS FOR THE YEAR 2000 BY COUNTY OF ORIGIN
IN THE SAN FRANCISCO BAY REGION--NO REDUCTION SCENARIO

SMALL QUANTITY GENERATOR WASTES ONLY

Treatment Method	Alameda	C.Costa*	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Organic	216	N/A	77	476	95	5	345	0	130	1,344
Aqueous Metals	2,837	N/A	197	210	611	36	4,636	234	1,350	10,111
Incineration	1,036	N/A	136	338	844	40	819	504	255	3,972
Solvent Recovery	2,222	N/A	794	629	1,630	192	3,341	590	640	10,038
Oil Recovery	34,938	N/A	6,551	9,487	13,050	1,893	54,002	4,826	23,600	148,347
Other Recycling	5,993	N/A	1,193	2,264	1,214	270	7,850	997	3,980	23,761
Stabilization	2,999	N/A	2	27	534	12	526	1,894	80	6,074
Residuals	13,174	N/A	1,710	2,469	4,098	481	15,320	3,623	6,056	46,931
Totals	63,415	N/A	10,660	15,900	22,076	2,929	86,839	12,668	36,091	250,578

*SQG waste estimates are not available from Contra Costa County.

TABLE V-3

PROJECTED OFF-SITE CAPACITY REQUIREMENTS FOR THE YEAR 2000 BY COUNTY OF ORIGIN IN THE SAN FRANCISCO BAY REGION--NO REDUCTION SCENARIO

HOUSEHOLD WASTES ONLY

Treatment Method	Alameda	C.Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Organic	84	55	17	8	50	41	92	22	28	397
Aqueous Metals	253	167	51	24	152	125	280	68	84	1,204
Incineration	413	271	83	39	248	203	456	111	137	1,961
Solvent Recovery	38	25	8	4	23	19	42	10	13	182
Oil Recovery	248	163	50	23	149	122	274	66	82	1,177
Other Recycling	13	9	3	1	8	7	15	4	4	64
Stabilization	0	0	0	0	0	0	0	0	0	0
Residuals*	974	640	195	91	585	480	1,075	261	323	4,624
Totals	2,023	1,330	407	190	1,215	997	2,234	542	671	9,609

* Residuals figures include miscellaneous household wastes, which can not be categorized by treatment method. See discussion in text, Section V.2.

TABLE V-4

TOTAL PROJECTED CAPACITY REQUIREMENTS FOR OFF-SITE HAZARDOUS WASTE FACILITIES FOR THE YEAR 2000 BY COUNTY OF ORIGIN IN THE SAN FRANCISCO BAY REGION--NO REDUCTION SCENARIO, IN TONS

MANIFESTED WASTES + SQG WASTES + HOUSEHOLD WASTES

Treatment Method	Alameda	C.Costa*	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Organic	318	1,208	94	484	155	3,939	471	22	158	6,849
Aqueous Metals	19,334	33,058	278	234	3,192	3,154	38,573	3,671	14,481	115,975
Incineration	16,509	16,274	1,002	424	2,166	4,803	8,486	1,823	928	52,415
Solvent Recovery	15,324	3,136	1,017	688	2,252	17,722	28,630	893	3,767	73,429
Oil Recovery	39,355	43,026	6,725	9,619	14,538	10,662	61,849	19,906	23,699	229,579
Other Recycling	12,638	49,233	1,817	2,265	5,224	3,583	37,508	4,287	10,962	127,517
Stabilization	8,365	13,645	3	411	573	2,775	9,834	9,931	31,511	77,048
Residuals	34,367	49,292	2,129	3,058	6,841	12,181	54,646	18,724	51,997	233,235
Totals	146,410	208,872	13,065	17,184	34,940	58,818	239,998	59,257	137,503	916,047

This table is a compilation of Tables V-1, V-2, and V-3 with two exceptions. First, waste oil quantities were subtracted from the manifested waste stream for all counties but Contra Costa for this table to avoid double-counting of this waste. For San Mateo County, the county projected waste oil total was separated into its manifested and SQG components and both estimates are added into the total. For a complete discussion see Section V.2.

* Contra Costa County does not include an estimate for SQG wastes.

TABLE V-5

TOTAL OFF-SITE HAZARDOUS WASTE CAPACITY REQUIREMENT IN THE SAN FRANCISCO BAY REGION BY COUNTY OF ORIGIN FOR THE YEAR 2000, IN TONS

MANIFESTED WASTES + SQG WASTES + HOUSEHOLD WASTES

County	Manifested Estimate	SQG Estimate	Household Estimate	Total	Percent
Alameda	80,972	63,415	2,023	146,410	16.0
Contra Costa*	207,542	N/A	1,330	208,872	22.8
Marin	1,998	10,660	407	13,065	1.4
Napa	1,093	15,900	190	17,184	1.9
San Francisco	11,650	22,076	1,215	34,940	3.8
San Mateo	54,893	2,929	997	58,818	6.4
Santa Clara	150,924	86,839	2,234	239,998	26.2
Solano	46,047	12,668	542	59,257	6.5
Sonoma	100,741	36,091	671	137,503	15.0
Totals	655,860	250,578	9,609	916,047	100.0

This table is a compilation of Tables V-1, V-2, and V-3 with two exceptions. First, waste oil quantities were subtracted from the manifested waste stream for all counties but Contra Costa for this table to avoid double-counting of this waste. For San Mateo County, the county projected waste oil total was separated into its manifested and SQG components and both estimates are added into the total. For a complete discussion see Section V.2.

* Contra Costa County does not include an estimate for SQG wastes.

TABLE V-6

PROJECTED OFF-SITE TREATMENT CAPACITY FOR THE YEAR 2000
BY COUNTY AND THE REGION, IN TONS

EXISTING FACILITIES WITH EXPECTED OPERATION IN 2000

Treatment Method	Alameda	C.Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Treatment-Organic	0	0	0	0	0	8,400	0	0	0	8,400
Aqueous Treatment-Metals	36,500	0	0	0	0	0	20,870[e]	0	0	57,370
Incineration	0	0	0	0	0	0	250	0	0	250
Solvent Recovery	504	0	0	0	0	50,400	26,460	0	0	77,364
Oil Recovery	75,600	0	0	0	76,000	0	0	0	0	151,600
Other Recycling	0	0	0	0	0	0	410	0	0	410
Stabilization	0	0	0	0	0	0	21,040	0	0	21,040
Residuals	0	0	0	0	0	0	0	0	0	0
Totals	112,604	0	0	0	76,000	58,800	69,030	0	0	316,434

Note: This table does not include hazardous waste transfer or storage facilities--only those for treatment.

TABLE V-7

PROJECTED OFF-SITE TREATMENT CAPACITY FOR THE YEAR 2000
BY COUNTY AND THE REGION, IN TONS

PROPOSED FACILITIES

Treatment Method	Alameda	C.Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Treatment-Organic	0	0	0	0	0	0	0	0	0	0
Aqueous Treatment-Metals	0	11,850[b]	0	0	0	0	6,200[f]	0	0	18,050
Incineration	0	142,000[a]	0	0	0	0	0	0	0	142,000
Solvent Recovery	0	2,850[b]	0	0	0	10,080[d]	0	0	0	12,930
Oil Recovery	0	8,600[b]	0	0	0	0	0	0	0	8,600
Other Recycling	0	6,700[b]	0	0	0	0	0	0	0	6,700
Stabilization	0	0	0	0	0	0	0	0	0	0
Residuals	0	0	0	0	0	0	0	0	0	0
Totals	0	172,000[c]	0	0	0	10,080[e]	6,200	0	0	188,280

Proposed Facilities

a: Stauffer Chemical incinerator

b: Erickson treatment station

c: Bay Area Environmental is planning to use mobile treatment for oil recovery, other recycling, and stabilization for approximately 70,000 tons, but no breakdown of treatment capacity is known; thus this capacity is not shown in the table.

d: This number represents the expansion of the solvent recovery capacity planned for the Romic chemical treatment facility.

e: Additional expansion of 26,600 tons is proposed by Romic, but no breakdown of treatment capacity is known, so is not included in the table.

f: A new technique is to be used at the existing Safe-Way Chemical facility resulting in capacity expansion of 6,200 tons.

Note: This table does not include hazardous waste transfer or storage facilities--only those for treatment.

TABLE V-8

TOTAL PROJECTED OFF-SITE TREATMENT CAPACITY FOR THE YEAR 2000
BY COUNTY AND THE REGION, IN TONS

EXISTING + PROPOSED FACILITIES

Treatment Method	Alameda	C.Costa	Marin	Napa	S.F.	S.Mateo	S.Clara	Solano	Sonoma	Region
Aqueous Treatment-Organic	0	0	0	0	0	8,400	0	0	0	8,400
Aqueous Treatment-Metals	36,500	11,850[b]	0	0	0	0	27,070[f]	0	0	75,420
Incineration	0	142,000[a]	0	0	0	0	250	0	0	142,250
Solvent Recovery	504	2,850[b]	0	0	0	60,480[d]	26,460	0	0	90,294
Oil Recovery	75,600	8,600[b]	0	0	76,000	0	0	0	0	160,200
Other Recycling	0	6,700[b]	0	0	0	0	410	0	0	7,110
Stabilization	0	0	0	0	0	0	21,040	0	0	21,040
Residuals	0	0	0	0	0	0	0	0	0	0
Totals	112,604	172,000[c]	0	0	76,000	68,880[e]	75,230	0	0	504,714

Proposed Facilities

a: Stauffer Chemical incinerator

b: Erickson treatment station

c: Bay Area Environmental is planning to use mobile treatment for oil recovery, other recycling, and stabilization for approximately 70,000 tons, but no breakdown of treatment capacity is known; thus this capacity is not shown in the table.

d: 10,080 tons of this total is due to a planned expansion of the current 50,400 ton treatment capacity at Romic Chemical.

e: Additional expansion of 26,600 tons is proposed by Romic, but no breakdown of treatment capacity is known, so is not included in the table.

f: 6,200 tons of this total is an increase due to a new technique to be used at the existing Safe-Way Chemical facility.

Note: This table does not include hazardous waste transfer or storage facilities--only those for treatment. It is a compilation of Tables V-6A and V-6B.

TABLE V-9

NEEDS DETERMINATION FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT CAPACITY IN THE YEAR 2000 FOR THE SAN FRANCISCO BAY REGION, IN TONS
NO REDUCTION SCENARIO

EXISTING FACILITIES ONLY

Treatment Method	+--Off-site Treatment Capacity*-+ Required	Available	Net Capacity Needed
Aqueous Organic	6,849	8,400	+1,551
Aqueous Metals	115,975	57,370	-58,605
Incineration	52,415	250	-52,165
Solvent Recovery	73,429	77,364	+3,935
Oil Recovery	229,579	151,600	-77,979
Other Recycling	127,517	410	-127,107
Stabilization	77,048	21,040	-56,008
Residuals	233,235	0	-233,235
Totals	916,047	316,434	-599,613

This table is a compilation of Tables V-4 and V-6. The Available treatment capacity for this table is based only on **current** facilities expected to be in operation in the year 2000.

*Required Capacity is the total waste generated (as projected), organized into treatment categories. **Available** Capacity is the treatment capacity based on the facilities already in operation. **Net Capacity Needed** is the difference between Required and Available Capacities, with a positive number representing excess capacity available and a negative number indicating additional facility capacity will be necessary. See Section V.4 for further discussion.

TABLE V-10

NEEDS DETERMINATION FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT
CAPACITY IN THE YEAR 2000 FOR THE SAN FRANCISCO BAY REGION, IN TONS
NO REDUCTION SCENARIO

EXISTING + PROPOSED FACILITIES

Treatment Method	+--Off-site Treatment Capacity*-+ Required	Available	Net Capacity Needed
Aqueous Organic	6,849	8,400	+1,551
Aqueous Metals	115,975	75,420	-40,555
Incineration	52,415	142,250	+89,835
Solvent Recovery	73,429	90,294	+16,865
Oil Recovery	229,579	160,200	-69,379
Other Recycling	127,517	7,110	-120,407
Stabilization	77,048	21,040	-56,008
Residuals	233,235	0	-233,235
Totals	916,047	504,714	-411,333

This table is a compilation of Tables V-4 and V-8. The Available Treatment Capacity is based on the total projected capacity for 2000, including both current and proposed facilities.

* **Required** Capacity is the total waste generated (as projected), organized into treatment categories. **Available** Capacity is the treatment capacity based on the facilities expected to be in operation. **Net Capacity Needed** is the difference between Required and Available Capacities, with a positive number representing excess capacity available and a negative number indicating additional facility capacity will be necessary. See Section V.4 for further discussion.

TABLE V-11

NEEDS DETERMINATION FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT CAPACITY IN THE YEAR 2000 FOR THE SAN FRANCISCO BAY REGION, IN TONS 10% AND 40% REDUCTION* SCENARIOS

EXISTING FACILITIES ONLY

Treatment Method	Capacity** REQUIRED Reduction Scenario 10%	40%	AVAILABLE	NET CAPACITY NEEDED Reduction Scenario 10%	40%
Aqueous Organic	6,204	4,268	8,400	+2,196	+4,132
Aqueous Metals	104,498	70,067	57,370	-47,128	-12,697
Incineration	47,370	32,233	250	-47,120	-31,983
Solvent Recovery	66,104	44,130	77,364	+11,260	+33,234
Oil Recovery	206,739	138,218	151,600	-55,139	+13,382
Other Recycling	114,772	76,536	410	-114,362	-76,126
Stabilization	69,343	46,229	21,040	-48,303	-25,189
Residuals	210,374	141,791	0	-210,374	-141,791
Totals	825,404	553,472	316,434	-508,969	-237,038

* The reduction estimates are based upon the industrial waste stream only: off-site manifested and SQGs. Thus manifested and SQG required capacity determinations are reduced by 10% or 40% and the contribution from households is not reduced. For a complete discussion of waste reduction scenarios, see Sections III.3 and V.4.

** **Required** Capacity is the total waste generated (as projected), organized into treatment categories. **Available** Capacity is the treatment capacity based on the facilities already in operation. **Net Capacity Needed** is the difference between Required and Available Capacities, with a positive number representing excess capacity available and a negative number indicating additional facility capacity will be necessary. See Section V.4 for further discussion.

TABLE V-12

NEEDS DETERMINATION FOR OFF-SITE HAZARDOUS WASTE MANAGEMENT CAPACITY IN THE YEAR 2000 FOR THE SAN FRANCISCO BAY REGION, IN TONS 10% AND 40% REDUCTION* SCENARIOS

EXISTING + PROPOSED FACILITIES

Treatment Method	Capacity** REQUIRED Reduction Scenario 10%	40%	AVAILABLE	NET CAPACITY NEEDED Reduction Scenario 10%	40%
Aqueous Organic	6,204	4,268	8,400	+2,196	+4,132
Aqueous Metals	104,498	70,067	75,420	-29,078	+5,353
Incineration	47,370	32,233	142,250	+94,880	+110,017
Solvent Recovery	66,104	44,130	90,294	+24,190	+46,164
Oil Recovery	206,739	138,218	160,200	-46,539	+21,982
Other Recycling	114,772	76,536	7,110	-107,662	-69,426
Stabilization	69,343	46,229	21,040	-48,303	-25,189
Residuals	210,374	141,791	0	-210,374	-141,791
Totals	825,404	553,472	504,714	-320,690	-48,758

* The reduction estimates are based upon the industrial waste stream only: off-site manifested and SQGs. Thus manifested and SQG required capacity determinations are reduced by 10% or 40% and the contribution from households is not reduced. For a complete discussion of waste reduction scenarios, see Sections III.3 and V.4.

** **Required** Capacity is the total waste generated (as projected), organized into treatment categories. **Available** Capacity is the treatment capacity based on the facilities expected to be in operation. **Net Capacity Needed** is the difference between Required and Available Capacities, with a positive number representing excess capacity available and a negative number indicating additional facility capacity will be necessary. See Section V.4 for further discussion.

Figure V-1

Estimated Required vs Available Capacity by Treatment Method for Off-Site Hazardous Waste Management Capacity in the Year 2000 for the San Francisco Bay Area Region (10% Reduction Scenario)

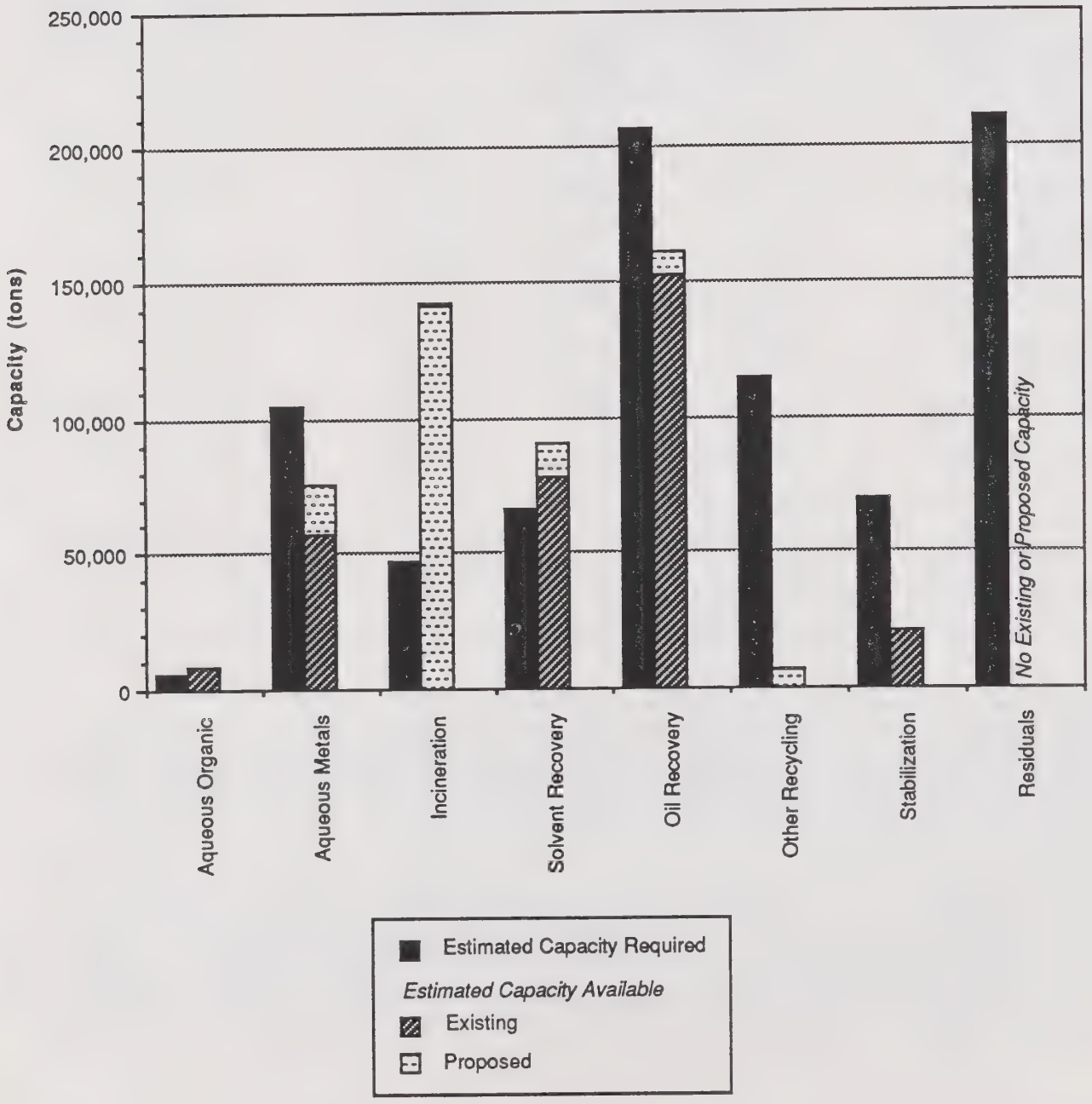
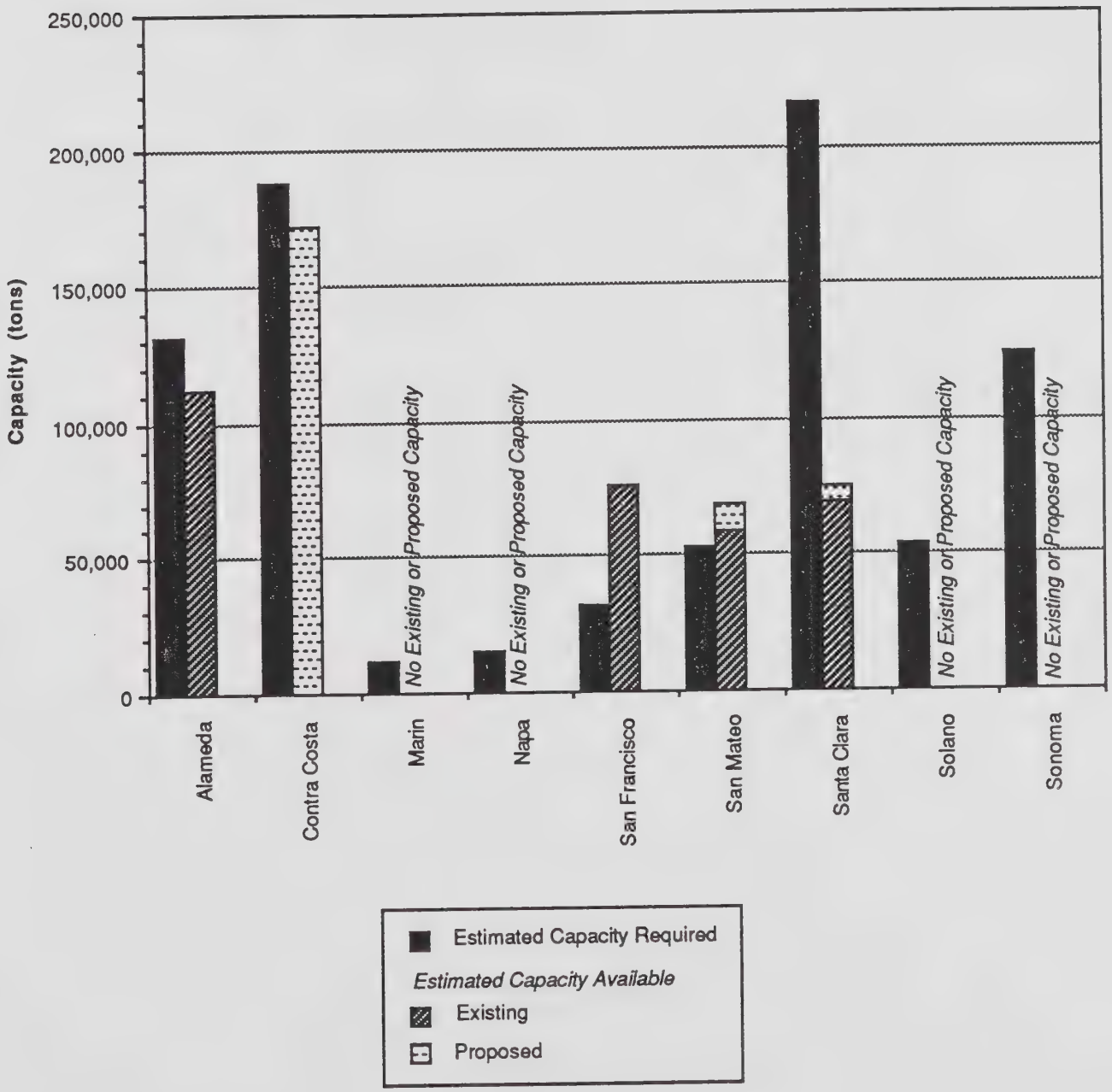


Figure V-2

Estimated Required vs Available Capacity by County for Off-Site Hazardous Waste Management Capacity in the Year 2000 for the San Francisco Bay Area Region (10% Reduction Scenario)



VI. SITING NEW OFF-SITE HAZARDOUS WASTE MANAGEMENT FACILITIES

VI.1. Introduction

The siting of hazardous waste management facilities is an important part of the San Francisco Bay Area's planning process since siting decisions can impact the local and regional environment, public health and economy for years to come. The siting criteria described in the regional plan is meant to provide guidance to local planning agencies developing county plan siting criteria. The regional criteria can lend strength to the county plans by specifying criteria that have been uniformly accepted by local governments. Region-wide agreement on siting criteria can provide siting continuity throughout the region.

The following sections will outline the regional plan's siting goals, the siting process and the recommended criteria for siting new hazardous waste management facilities in the region. Ultimately, the individually approved county hazardous waste plans will specify siting criteria that will be used within each jurisdiction. The regional plan siting criteria is outlined to provide guidance to local jurisdictions. The regional plan's siting criteria will not be used during the actual siting of a new facility. The county or city plan criteria will be used for a facility to obtain a local land use permit. The regional plan siting criteria does not have this authority.

VI.2. Siting Goals

The following siting goals were developed by the Regional Siting Criteria Subcommittee to address issues covering both private and public sector hazardous waste management facilities.

Goal 1: Protect public health and safety

Protection of public health and safety covers a broad range of issues that can be addressed by the siting criteria. Minimizing the potential for public exposure to hazardous waste will protect the public health and safety. This goal includes transportation of hazardous waste (minimization of accidents and providing adequate routes) along with proximity of management facilities to populations and protection of neighbors.

Goal 2: Protect the environment including land, groundwater, surface water and air by mitigating environmental impacts so that a net environmental benefit will result.

The proper management of hazardous wastes should be enhanced by careful siting of needed new hazardous waste management facilities. These facilities shall be sited in such a manner that potential negative environmental impacts (on water, land and air) will be mitigated, thus minimizing environmental degradation. Siting of new facilities will result in a net environmental benefit because they will provide needed hazardous waste management capacity.

Goal 3: Protect the economic base of the Bay Area

By managing hazardous waste safely, the Bay Area economy will be enhanced. Siting new hazardous waste management facilities to meet the hazardous waste needs of the area will provide the Bay Area with a competitive economic edge and add to the desirability of businesses to locate in the Bay Area.

Goal 4: Coordinate facility siting actions with land use and regulatory agencies

A lack of coordination between local land use authorities and other regulatory agencies involved in siting decisions has been problematic in the past. Regional water quality and air quality districts must be

consulted so that California Environmental Quality Act (CEQA) assessment documents cover all necessary areas.

Goal 5: Public participation is an essential element of the siting process and shall be encouraged to the maximum extent feasible.

Public participation must be a component of facility siting. A siting proposal will only be successful when public concerns and fears are addressed. The public must have ample opportunity to participate so that their questions about the safety of a facility are adequately addressed.

VI.3. Siting Process

The siting process presented here centers on a three-step sequence, applying siting criteria sequentially at each step. Figures VI-1 and VI-2 outline the process. This format was adopted from the Sonoma County Hazardous Waste Management Plan. The task force felt that this presentation more clearly delineated the steps to meeting the siting criteria. A proposed facility must fulfill the criteria in the first step before considering the second step, and so on. Qualified new facilities will meet all siting criteria in all three steps.

The first step in the process addresses factors that must be present at a proposed site. These are called "inclusionary criteria." If a proposed site meets all the criteria in the first step, then the second step is initiated.

The second step in the process addresses factors that may involve environmental, legal or health impacts that justify excluding areas as potential sites for one or more types of hazardous waste management facilities. These are termed "exclusionary criteria." Both the inclusionary and exclusionary criteria are based on land-use planning and regulatory concerns of the site itself, rather than on the facility design. If both the inclusionary and exclusionary criteria are fulfilled, then the third step is initiated.

The third step of the process is termed "conditional criteria." It sets out performance or design standards which must be addressed if a facility meets both the inclusionary and exclusionary criteria in the first two steps. In contrast to inclusionary and exclusionary criteria which set forth specific requirements or prohibitions regarding facility siting, conditional criteria are ones which must be evaluated by the developer and the local community to determine acceptability of a specific facility design.

VI.4. Siting Criteria

The following regional siting criteria are designed to provide guidance and continuity to local governments in the San Francisco Bay Area Region. Although many criteria reflect existing requirements of state or federal laws, the criteria are not intended to substitute for these statutory requirements. All facilities must conform to applicable state and federal standards as a condition to receive necessary federal and state permits.

The flow charts presented in Figures VI-1 and VI-2 illustrate siting criteria for transfer, treatment and incineration facilities and residual repository facilities, respectively.

VI. 4.1 Criteria for Siting New Off-site Hazardous Waste Transfer, Treatment and Incineration Facilities (Figure VI-1)

VI. 4.1.1 Inclusionary Criteria

The following are used to locate areas where a transfer, treatment, or incineration facility might be appropriately sited. The numbers preceding each criteria correspond to the numbers on Figure VI-1.

(1.1) Consistent with Plan Goals and Policies: Potential facilities shall be consistent with approved local and regional hazardous waste management plan goals, policies, and objectives.

(1.2) Industrial and Special Zones: Potential site locations shall be within industrial or specially zoned areas for hazardous waste management facilities in accordance with the local general plan.

(1.3) Located Near Generators: Facilities should be located close to waste generation sources to minimize the risks of transportation. In addition, the proximity to other existing and proposed hazardous waste management facilities should be considered.

(1.4) Highway Access: Potential sites should be located in areas that minimize distances to major transportation routes that are designed to accommodate heavy vehicles. Road networks leading to major transportation routes should not pass through residential neighborhoods, should minimize resident-frontages in other areas and should be demonstrated to be safe with regard to road design and construction, accident rates, and excessive traffic.

VI. 4.1.2 Exclusionary Criteria

Transfer, treatment and incineration facilities may not be sited in areas defined by the following criteria:

(2.1) Within 200 feet of a fault: No facility should be placed within 200 feet from a known active or recently active fault.

(2.2) Environmentally sensitive areas:

(a) Parklands and Open Spaces--No transfer station, treatment facility, or incinerator may be located within a National, State, Regional, County or City Park, Forest, Monument, designated National Recreational or Wilderness Area, Wildlife Refuge, or Wild and Scenic River or other designated open space identified in the applicable general, regional, or state plan.

(b) Critical Habitats--No facility should be located within critical habitat areas, as defined in adopted general, regional or state plans.

(c) Wetlands--No facilities shall be located in wetlands such as saltwater, freshwater and brackish marshes, swamps and bogs inundated by surface or groundwater with a frequency to support, under normal circumstances, a prevalence of vegetation or aquatic life which requires saturated soil conditions for growth and reproduction, as defined in adopted general, regional or state plans.

(d) Agricultural Land--Under California law, prime agricultural lands may not be used for urban purposes unless an overriding public need is served. When siting hazardous waste management facilities in these areas, overriding public need must be demonstrated.

(e) Mineral Resources Areas--No facility should be sited so as to preclude extraction of minerals necessary to sustain the economy of the state.

(2.3) Dam Failure Flood Areas: No transfer station, treatment facility, or incinerator shall be located in areas below a dam structure that would be inundated by the flow of water created should the structure fail, unless protected by engineered solutions to mitigate potential adverse impacts. Engineered solutions shall be described fully in a safety analysis report.

(2.4) Cultural or Aesthetic Areas: Treatment facilities may not be located in areas having local, regional, state or national significance or value for particular recreational, cultural or aesthetic reasons. (Cultural areas include historic preservations, Indian reservations or other areas of significant cultural interest. Aesthetic areas are those with scenic designation in state or local general plans.) Low

volume transfer and storage facilities may be allowed in these areas if their location is necessary to handle hazardous wastes generated by visitors, workers or residents of the area.

(2.5) Airport: No transfer station, treatment facility, or incinerator may be located within a safety zone or air installation compatibility zone, generally defined as the area immediately surrounding a public or military airport, including the immediate approach and take-off paths.

(2.6) Military Lands: It is the policy of the Department of Defense (DOD) that military land shall not be considered for establishment of public hazardous waste management facilities. This policy is considered non-negotiable by DOD.

VI. 4.1.3 Conditional Criteria

Risk management and specific mitigation measures for transfer stations, treatment plants and incinerators may be required if the proposed facility fails to meet the following criteria:

(3.1) Distance from Residences: Potential sites may require the establishment of a buffer zone to protect residential areas or areas designated for future residential development from adverse emissions from the proposed facility. The need and/or size of the buffer zone should be determined by a risk assessment which will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled and the environment of the area including hydrological, geological, meteorological and geographical considerations.

(3.2) Immobile Populations: Potential sites may require the establishment of a buffer zone separating the site from facilities housing or serving immobile populations such as child care facilities, hospitals, convalescent homes and prisons. The need and/or size of the buffer zone should be determined by a risk assessment which will

consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled and the environment of the area including hydrological, geological, meteorological and geographical considerations.

(3.3) Public Assembly Facilities: Proximity to public facilities where large numbers of people gather may cause adverse impacts and may require the establishment of a buffer zone. The need and/or size of the buffer zone should be determined by a risk assessment which will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled and the environment of the area including hydrological, geological, meteorological and geographical considerations.

(3.4) Emergency Services and Utilities: Potential sites must have sufficient water, sewer and emergency services including police, fire, emergency medical and hazardous materials response. Self-sufficient services must be provided when water, sewer and emergency services are not adequate. Potential sites should be located in areas where there is more than one access route for emergency services.

(3.5) Soil Stability: Facilities located within areas exhibiting unstable soil conditions should have engineered design features to assure structural stability. This category includes steep slopes and areas subject to liquification and subsidence due to natural causes.

(3.6) Floodplains: No new facilities shall be sited in areas subject to 100-year floods or by flash flooding and debris flows or major storm surges from storms, river flooding, rainfall, snowmelt, tsunamis, seiches, or coastal flooding, unless the facility developer can demonstrate that adequate features are designed, constructed, and maintained to preclude failure or washout resulting from such events. This may be demonstrated by structural or other engineering studies.

(3.7) Soil Permeability: All above ground facilities should avoid locating on highly permeable soils unless they have engineered design features including spill containment and monitoring devices.

(3.8) Surface Water: All facilities should locate in areas posing minimal threats to the contamination of usable surface water supplies through overland flow or subsurface percolation and laminar flow. Additional containment features may be necessary to minimize the risk to surface waters.

(3.9) Groundwater:

(a) Standards--All potential sites must meet Regional Water Quality Control Board standards.

(b) Major Groundwater Recharge Zone--No facility shall be located in any area known to be, or suspected of, supplying recharge to a major regional aquifer, unless the facility developer can demonstrate adequate protection through properly designed, constructed, and maintained spill containment features, inspection and monitoring measures and other environmental protection controls. These areas may be defined and identified in general, regional, or state plans.

(c) Proximity to Supply Wells and Well Fields--No facility shall be located within the cone of depression created by pumping a well or well field for 90 days, unless the facility developer can demonstrate that an effective hydrogeological barrier to vertical flow exists.

(d) Foundation Strength--The developer of a facility must demonstrate the foundation of all containment structures at the facility are capable of withstanding hydraulic pressure gradients to prevent failure due to settlement, compression, or uplift during the life of the facility, as certified by a civil engineer or engineering geologist registered in California.

(e) Monitoring--An adequate and reliable groundwater monitoring system must be designed and maintained for any facility with below-ground tanks or storage.

(3.10) Sewer Access: Those treatment facilities generating treated wastewater effluent should be located in areas with adequate sewer capacity to accommodate the expected wastewater discharge: both its volume and its contaminant characteristics. Otherwise, proposed sites should be evaluated for ease of connection to a sewer. The potential impact of the facility's sewer discharge on the effected wastewater treatment facility or other receptors shall be evaluated and any adverse effects mitigated through advanced on-site wastewater treatment.

(3.11) Air Quality:

(a) Standards--All potential facilities must meet the appropriate air quality management district or air pollution control district standards and other applicable state and federal standards regarding acceptable air emission levels.

(b) No Net Adverse Impacts--Siting of potential facilities in an area where one or more criteria air pollutants exceeds the National Ambient Air Quality Standards established by the Federal Clean Air Act should not be precluded unless an air quality impact assessment performed as a part of permitting shows that the facilities' criteria air pollutant emissions will significantly interfere with attainment or maintenance of standards, that such emissions cannot be mitigated, and that the criteria pollutant impacts from such facilities are significantly greater than those associated with transporting hazardous wastes.

(c) No Unacceptable Health Risks--Health risk analysis conducted as part of the permitting process shall evaluate the risk of human health effects of toxic air contaminant emissions from proposed facilities. Such analysis shall be conducted in accordance with appropriate air quality management district or air pollution control district rules, policies, and guidelines. Potential facilities shall not be approved if the human health

risk is determined to be unacceptable by the appropriate Air Pollution Control Officer.

(3.12) Truck Routes: Facilities should be located such that any access routes from the major public highway to and from the facility are used primarily by trucks, and that the number of nonindustrial structures, including homes, schools and hospitals, is minimal. This may require the developer to restrict hazardous waste transportation during peak traffic or nonindustrial use hours, define alternate routes for transporters, upgrade local roads, or build a direct access, dedicated-use road to the facility to avoid minor or inappropriate routes. Risk assessments may justify exceptions based on the facility design and performance standards and mitigation measures.

(3.13) Noise: Facilities should be located so as to minimize any additional noise impacts on the surrounding area. Mitigation measures to reduce noise from facility equipment or traffic may be required.

(3.14) Risk Assessment: A human health and safety exposure assessment shall be performed as part of the siting and permitting process.

VI.4.2 Criteria for Siting New Off-site Hazardous Waste Residual Repositories (Figure VI-2)

VI.4.2.1 Inclusionary Criteria

These criteria are used to identify those geographic areas where a repository potentially could be sited. The numbers preceding each criteria correspond to the numbers on Figure VI-2.

(1.1) Consistent with Plan Goals and Policies: Potential residuals repositories shall be consistent with the approved local and regional hazardous waste management plan goals, policies and objectives.

(1.2) Good Highway Access: A residual repository should be located on major paved roads designed to accommodate heavy vehicles, with good access to public highway routes and which do not require trucks carrying hazardous waste to pass through residential neighborhoods. The site must have more than one access route for emergency service vehicles.

(1.3) Consistent with Industrial or Specially Zoned Areas: Potential site locations shall be within industrial or specially zoned areas for hazardous waste management facilities in accordance with local general plans. Facility siting shall take into account the proximity to existing facilities within the proposed county and adjacent counties, and proximity to proposed facilities within the county or neighboring counties.

VI.4.2.2 Exclusionary Criteria

A residuals repository may not be sited in areas defined by the following criteria:

(2.1) Within 200 feet of a Fault: No facility should be placed within 200 feet from a known active or recently active fault.

(2.2) Environmentally Sensitive Areas:

(a) Parklands--No facility may be located within a National, State, Regional, County or City Park, Forest, Monument, designated Recreation or Wilderness Area, Wildlife Refuge, or Wild and Scenic River or other designated open space identified in the applicable general, regional, or state plan.

(b) Critical Habitat--No facilities should be located within critical habitat areas, as defined in adopted general, regional or state plans.

(c) Wetlands--No facilities shall be located in wetlands such

as saltwater, fresh water and brackish marshes, swamps and bogs inundated by surface or groundwater with a frequency to support, under normal circumstances, a prevalence of vegetation or aquatic life which requires saturated soil conditions for growth and reproduction, as defined in adopted general, regional or state plans.

(d) Agricultural Lands--Under California law, prime agricultural lands may not be used for urban purposes unless an overriding public service need is demonstrated.

(e) Mineral Resources Areas--No facilities should be sited so as to preclude extraction of minerals necessary to sustain the economy of the State.

(2.3) Dam Failure Flood Areas: No residuals repository may be located in areas below a dam structure (i.e., reservoir dam, debris basin) that would be inundated by the flow of water created if the dam structure were to fail. These areas may be identified from dam failure inundation maps from the State Office of Emergency Services.

(2.4) Floodplains: New sites are prohibited in area subject to 100-year floods and debris flows or major storm surges from storms, river flooding, rainfall, snowmelt, tsunamis, seiches, or coastal flooding.

(2.5) Soil Stability: No potential facility may be located within areas exhibiting unstable soil conditions, including steep slopes and areas subject to liquification and subsidence due to natural causes.

(2.6) Soil Permeability: Potential sites shall meet soil and depth-to-groundwater siting requirements of the State Water Resources Control Board.

(2.7) Groundwater:

(a) Standards--All potential sites must meet Regional Water Quality Control Board standards.

(b) Major Groundwater Recharge Zones--Repositories shall not be located within areas known or suspected to be applying principal recharge to a regional aquifer, as defined in adopted general, regional or state plans.

(c) Proximity to Supply Wells and Well Fields--No residuals repository shall be located within the cone of depression created by pumping a well or well field for 90 days.

(d) Areas Over Significant Usable Groundwater--No residuals repository shall be located in areas defined by the Regional Water Quality Control Board or the EPA as having vulnerable hydrology.

(2.8) Distance from Residents: A minimum buffer zone of 2,000 feet is required for any hazardous waste residual repository unless the owner proves to the Department of Health Services' satisfaction that a 2,000 foot buffer zone is not required to protect public health and safety. Potential sites must have, at a minimum, a 2,000-foot buffer zone from areas designated for future residential development.

(2.9) Airport Zones: No residuals repository may be located within a safety zone or an air installation compatibility zone, generally defined as the area immediately surrounding a public or military airport, including the immediate approach and take-off paths.

(2.10) Cultural and Aesthetic Areas: No residual repositories shall be located in areas having local, regional, state or national significance or value for particular recreational, cultural or aesthetic reasons. (Cultural areas include historic preservation, archaeological sites, Indian reservations or other areas of significant cultural interest. Aesthetic areas are those with scenic designation in State or local general plans).

(2.11) Military Lands: It is the policy of the Department of Defense (DOD) that military land shall not be considered for establishment of public hazardous waste management facilities. This policy is considered non-negotiable by DOD.

VI.4.2.3 Conditional Criteria

Risk assessments and specific mitigation measures may be required to meet the following criteria:

(3.1) Proximity to Immobile Populations: Large buffer zones are required between a residuals repository and any immobile populations, such as hospitals, convalescent homes, facilities for the mentally ill, schools, prisons, etc., because evacuation in the event of an accident at the facility is likely to be difficult or inadvisable. This is especially true for repository facilities handling ignitable, explosive, or reactive wastes. A minimum buffer zone of 5,000 feet between a facility and any immobile population is therefore included as a conditional criterion, unless the developer can demonstrate that a smaller buffer zone provides adequate protection for an immobile population in the event of the maximum credible accident or fugitive emission incident.

(3.2) Proximity to Public Assembly Facility: Proximity to public facilities where large numbers of people gather may cause adverse impacts and may require the establishment of a buffer zone. The need and/or size of the buffer zone should be determined by a risk assessment which will consider the design features of the facility, the physical and chemical characteristics of the wastes that will be handled and the environment of the area including hydrological, geological, meteorological and geographical considerations.

(3.3) Surface Waters: All facilities should locate in areas posing minimal threats to the contamination of usable surface water supplies. Additional containment features may be necessary to minimize the risk to surface waters.

(3.4) Water, Sewer and Emergency Facilities: Potential sites must have sufficient water, sewer and emergency services including police, fire, emergency medical and hazardous materials response. Self-sufficient services must be provided when water, sewer, and emergency services are not adequate.

(3.5) Groundwater:

(a) Foundation Strength--The developer of a facility must demonstrate that the foundation of all containment structures at the facility are capable of withstanding hydraulic pressure gradients to prevent failure due to settlement, compression, or uplift during the life of the facility, such that it meets requirements of the State Water Resources Control Board, as certified by a registered civil engineer or engineering geologist registered in California.

(b) Monitoring--An adequate and reliable groundwater monitoring system must be designed and maintained for any facility, with below-ground tanks or storage.

(3.6) Air Quality:

(a) Standards--All potential facilities must meet the appropriate air quality management district or air pollution control district standards and other applicable state and federal standards regarding acceptable air emission levels.

(b) No Net Adverse Impacts--Siting of potential facilities in an area where one or more criteria air pollutants exceeds the National Ambient Air Quality Standards established by the Federal Clean Air Act should not be precluded unless an air quality impact assessment performed as a part of permitting shows that the facilities' criteria air pollutant emissions will significantly contribute or interfere with attainment of standards, that such emissions cannot be mitigated and that the

criteria pollutant impacts from such facilities are significantly greater than those associated with transporting hazardous wastes.

(c) No Unacceptable Health Risks--Health risk analysis conducted as part of the permitting process shall evaluate the risk of human health effects of toxic air contaminant emissions from proposed facilities. Such analysis shall be conducted in accordance with appropriate air quality management district or air pollution control district rules, policies, and guidelines. Potential facilities shall not be approved if the human health risk is determined to be unacceptable by the appropriate Air Pollution Control Officer.

(3.7) Truck Routes: Facilities should be located such that any access routes from the major highway route to and from the facility are used primarily by trucks and the number of nonindustrial structures, including homes, schools and hospitals, is minimal. This may require that the developer restrict hazardous waste transportation during peak traffic or nonindustrial use hours, define alternate routes for transporters, upgrade local roads, or build a direct access, dedicated-use road to the facility to avoid minor or inappropriate routes. Risk assessments may justify exceptions based on the facility design and performance standards and mitigations.

(3.8) Noise: Facilities should be located so as to minimize any additional noise impacts on the surrounding area. Mitigation measures to reduce noise from facility equipment or traffic may be required.

(3.9) Risk Assessment: A human health and safety exposure assessment shall be performed as part of the siting and permitting process.

VI.5. Conclusion

The proposed siting criteria presented here have been largely based upon the DHS Guidelines and Criteria from several counties in the region. The regional plan siting criteria have been developed to provide guidance to Bay Area Counties and to define a uniform approach to siting new hazardous waste management facilities in the region.

FIGURE VI-1
PROCESS AND CRITERIA FOR SITING NEW OFF-SITE HAZARDOUS WASTE TRANSFER, TREATMENT & INCINERATION FACILITIES

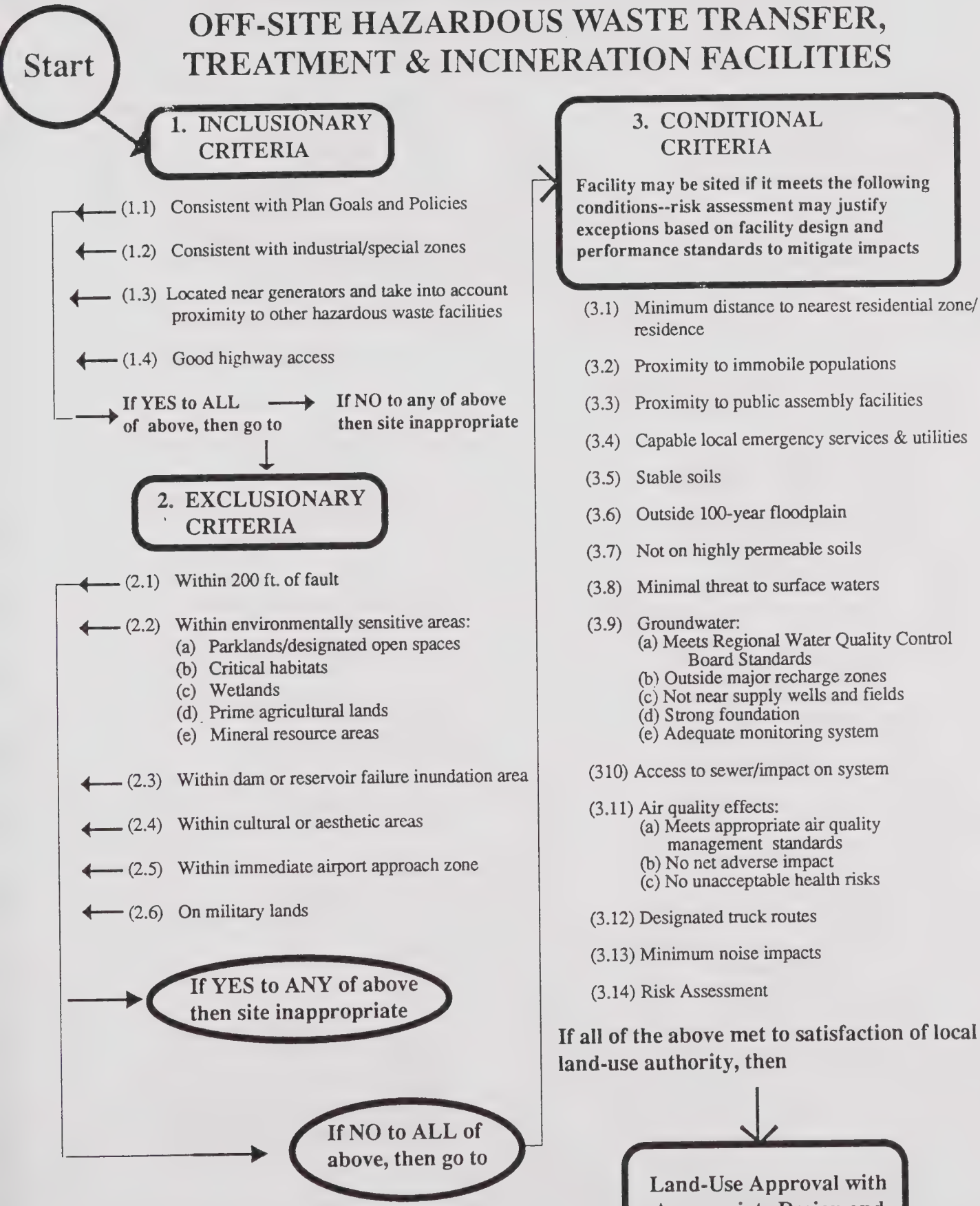


FIGURE VI-2
PROCESS AND CRITERIA FOR SITING NEW OFF-SITE HAZARDOUS WASTE RESIDUALS REPOSITORIES

Start

1. INCLUSIONARY CRITERIA

- (1.1) Consistent with Plan Goals and Policies
- (1.2) Good highway access
- (1.3) Consistent with industrial or specially zoned areas, & taking into account proximity to other facilities

If YES to ALL of above, then go to → **If NO to any of above then site inappropriate**

2. EXCLUSIONARY CRITERIA

- (2.1) Within 200 ft. of fault
- (2.2) Within environmentally sensitive areas:
  - (a) Parklands
  - (b) Critical habitats
  - (c) Wetlands / designated open spaces
  - (d) Prime agricultural lands
  - (e) Mineral resource areas
- (2.3) Within dam failure flood area
- (2.4) Within 100-year floodplain
- (2.5) On unstable soil
- (2.6) On highly permeable soil
- (2.7) Groundwater:
  - (a) Meets Regional Water Quality Control Board Standards
  - (a) Within major recharge zones
  - (b) Near supply wells
  - (c) Over significant usable groundwater
- (2.8) Within 2000 ft. of nearest residence/zone
- (2.9) Within immediate airport approach zone
- (2.10) Within cultural, or aesthetic areas
- (2.11) On military land

If YES to ANY of above then site inappropriate → **If NO to All of above, then go to**

3. CONDITIONAL CRITERIA

Facility may be sited if it meets the following conditions--risk assessment may justify exceptions based on facility design and performance standards to mitigate impacts

- (3.1) Proximity to immobile populations
- (3.2) Proximity to public assembly facilities
- (3.3) Minimal threat to surface waters
- (3.4) Capable water, sewer and emergency services
- (3.5) Groundwater:
  - (a) Strong foundation
  - (b) Monitoring system
- (3.6) Air quality effects
  - (a) Meets appropriate air quality management standards
  - (b) No net adverse impact
  - (c) No unacceptable health risks
- (3.7) Designated truck routes
- (3.8) Minimal noise impact
- (3.9) Risk Assessment

If all of the above met to satisfaction of local land-use authority, then

Land-Use Approval with Appropriate Design and Performance Conditions

VII. HAZARDOUS WASTE REDUCTION

VII.1 Introduction

Hazardous waste minimization is a primary objective of this planning effort. The most effective way to reduce hazardous waste is at the source, rather than managing it after the fact. The hazardous waste management hierarchy endorsed by the Task Force, prioritizes minimization techniques:

1) source reduction,
2) recycling, and
3) waste treatment.

This chapter will discuss the goals of hazardous waste reduction planning, the benefits and barriers to implemention of such a plan, components of a successful waste minimization program, and some suggestions for financing such a program at the local government level.

VII.2 Goals, Benefits, Barriers, and Potential for Hazardous Waste Reduction Programs

VII.2.1 Goals of a Hazardous Waste Reduction Plan

The goal of a hazardous waste reduction plan is to prevent, as far as possible, a hazardous substance from entering the waste stream altogether. To provide guidance in attaining this goal the Task Force has adopted the hazardous waste management hierarchy depicted in Table VII-1. The five general techniques used for waste reduction are:

-Product substitution
-Raw material substitution
-Process modification
-Recycling and reuse (on-site)
-Recycling and reuse (off-site)

These five waste reduction techniques will be discussed below. A more in-depth discussion is provided in Technical Memo 6 contained in Appendix 5.

Product and Raw Material Substitution: Substitution is one approach to reducing or eliminating the generation of hazardous waste. Shifting to a product that does not result in production of a hazardous material, or does not require hazardous compounds during the manufacturing process, is an option to facilitate reduction of hazardous wastes. Examples of substitution used in industry are outlined in Technical Memo 6 contained in Appendix 5.

Household products can also result in hazardous wastes. Substituting non-hazardous products reduces the potential for hazardous waste generation from households.

Process Modification: Process modification is an alternative to substitution in cases where the raw materials are essential to the finished product and the finished product itself cannot be substituted or replaced. Both major and minor redesign of manufacturing process techniques can be part of a waste reduction program. The simplest form of process modification is to improve housekeeping. Better housekeeping measures can frequently be easily instituted. Proper tracking of inventories and returning materials that have exceeded their shelf life expiration dates can reduce the potential for chemicals to degrade and become waste. A number of industries have initiated or are experimenting with major process changes including the semiconductor, paint and metal finishing industries.

Recycling and Reuse: When waste generation is inevitable, it can frequently be recycled or reused, preferably at the location where it is generated (on-site). Most on-site recycling or reuse involves using the waste in the process that originally generated it, reusing the waste in a different process at the same facility, or collecting the waste for use in another marketable product. Waste may also be shipped to another location for recycling or reuse, although on-site recycling is preferable since it eliminates the potential risks involved in transporting wastes. Examples of on-site recycling and reuse are becoming more common place as industries realize the positive impacts of on-site recycling and reuse.

For some small quantity generators, off-site recycling/reuse may be more practical. Wastes can be transported to commercial facilities where they are processed for distribution on the open market or for return to the original generator. In California, the California Waste Exchange publishes a list of available and wanted hazardous wastes. Industries generating a "wanted" waste stream can use the exchange to identify companies that will use their waste and vice versa. The Department of Health Services also publishes an annual list of industrial recyclers enabling industries to identify recycling facilities that can accept their waste streams.

In order to identify the most advantageous components to a specific waste minimization program, a waste reduction plan is needed. The elements that each plan should cover are outlined in Table VII-2, developed by the Ventura County Environmental Health Department. The five steps include:

1) developing an inventory of raw products and waste sources,
2) prioritizing target chemicals and waste,
3) defining alternative process changes,
4) scheduling program implementation, and
5) monitoring and evaluating the program.

An effective plan must contain an element that addresses how to measure implementation success. This measurement tool provides important feedback to management and employees on the program and can be used to encourage further waste reduction practices.

VII.2.2 Benefits of Waste Reduction Programs

The most obvious benefit of hazardous waste reduction to industry is that it can save money. Although the start-up costs of a waste reduction program may initially seem disheartening, generators should consider the costs of conventional waste disposal, especially as they will increase over the next 5 or 10 years. These include: increasing costs for hazardous waste storage, treatment, transportation and disposal; costs of replacing materials which could be reused or recycled; costs associated with

compliance to increasingly stringent hazardous waste disposal regulations; generator fees and taxes; pollution liability insurance; and costs associated with reporting and recordkeeping.

Industry can also benefit from hazardous waste reduction programs in less easily quantifiable but equally important terms such as: improved image in the community; improved employee relations by providing a safer work place; and reduced liabilities associated with environmental problems and workplace safety. In short, industry has enormous incentive to minimize hazardous waste production.

VII.2.3 Barriers to Hazardous Waste Reduction

Barriers faced by generators in implementing an effective hazardous waste reduction plan include: technical, institutional, financial, and physical constraints.

Technical Constraints are ones which impede a firm's ability to develop, evaluate or implement waste reduction methods due to a lack of awareness of the availability or application of waste reduction practices. These barriers include: lack of technical information, lack of in-house expertise and absence of readily available technologies.

Institutional Constraints can be either regulatory constraints or lack of awareness and commitment at the decision-making level in companies, governments, or the public. The spector of an actual organized public opposition may delay or even scuttle projects to establish waste reduction facilities. The utilization of some waste reduction technologies may require the generator to obtain permits from DHS. This can be a costly, lengthy and ultimately discouraging process.

Financial Constraints: Although the implementation of hazardous waste reduction technologies result in a net savings to the generator, start-up costs may present a significant obstacle, especially for small companies. Lack of capital for expanding or modifying existing operations is a common obstacle.

Physical Constraints include lack of space, outdated equipment, and process layout. As with financial barriers, this is more often a constraining factor for smaller companies.

VII.2.4 Identifying Waste Reduction Potential

Determining the potential for waste reduction through source reduction, recycling and treatment is an important early step in the development of a local program. The key to waste reduction planning is knowing waste composition and the reasons waste are produced. In making assumptions about any industry or company, one must consider the following individual variables: the size and nature of the waste generator; the type, quantity and concentration of the waste being generated; current management practices; and current waste reduction programs.

VII.3 Components of a Successful Local Government Program and Financing Options

The following section describes elements which could be included in a local government waste reduction program. Some of the suggestions may be appropriate to some localities but not to others due to budgetary restraints, the nature of the waste being generated, or other factors. Program planners may wish to treat this section as a menu of some, although certainly not all, of the options available to them.

VII.3.1 Information and Education

One of the most essential ingredients to a successful hazardous waste reduction program is industry cooperation. Industry and local government must work together with a shared commitment to the program's goals. The cooperation of the waste generators is essential to the success of any plan to reduce industrial waste. The best way to gain such cooperation is to make known the effectiveness and economic benefits provided in a waste

reduction plan. Minimizing hazardous waste can save industry and small businesses money. The issue should be viewed as one of micro-economics rather than of regulatory compliance or environmental controls.

More specifically, generators need information regarding waste reduction techniques, regulatory requirements, and technical and economic requirements of implementing waste reduction measures. Localities could disseminate information via routine hazardous materials or hazardous waste inspections or include waste minimization information with new or renewed permit processes. Fact sheets, flyers, and even a periodic newsletter could be distributed through trade associations and industry representatives. Hazardous waste generator inspection personnel could be trained to provide technical advice and answer questions.

Other activities might include: establishing a technical library on hazardous waste reduction; creating a "hotline" number for industry or public questions; and holding workshops for trade associations, business bureaus, etc, to disseminate information on waste reduction practices and technologies. Presentations (including videos, slides, or radio and TV programs) could be prepared to educate the public on household hazardous waste as well.

VII.3.2 Technical Assistance

Many firms, especially small quantity generators, will require technical assistance to pursue source reduction opportunities successfully. Much of the technical assistance could be provided through the routes discussed in the previous section on education and information. Technical information could include: the California Waste Exchange List of Industrial Recyclers, financial opportunities, names of reputable waste reduction engineers and various equipment vendors.

The most effective form of assistance would be to provide facility-specific advice for generators. Local governments could provide site visits and subsequent waste reduction advice on demand from generators. Such a service would require local governments to hire or train waste reduction

specialists. Another option would be using qualified U.C. students to provide low or no-cost technical consultations. In fact, AB 1961 (Farr, 1987) requested that the University of California evaluate the feasibility of offering student-conducted hazardous waste audits through the University.

Finally, technical assistance can also include insurance risk audits, help in developing risk minimization plans to increase a firm's insurability, and providing financial, management and business planning assistance to enable generators to take full economic advantage of waste minimization.

VII.3.3 Economic Incentives and Financial Assistance

As mentioned earlier, even though waste reduction can save money, the initial capital investment needed for process modification or product reformation can serve as a disincentive to such a program. Government can encourage hazardous waste minimization by aiding companies to locate funding.

Larger corporations usually have access to more financial resources than small companies. Therefore, local governments should concentrate their efforts on small companies generating hazardous waste. Local government could provide assistance by coordinating efforts to win joint industry-government grants from state and Federal agencies and private foundations, as well as coordinating a government-industry partnership which would work to provide generators some access to long-term, low-interest loans to be used for waste reduction purposes.

Local governments could coordinate a waste exchange, and/or encourage intermediary companies that buy surplus chemicals or chemical suppliers to participate in a county wide buy back or exchange program. Localities could also encourage industries using similar chemicals or processes to cooperate by sharing recycling or processing facilities, providing technical information, or sharing surplus materials. Companies participating in such a waste management co-operative could be eligible for a tax incentive or rebate.

VII.3.4 Achievement Recognition

Recognizing industry's achievement in waste minimization can provide an incentive for some. Recognition can take the form of a public awards ceremony by an appropriate government agency; the granting of certificates of achievement; and giving firms with especially well-conceived waste minimization programs priority for any available grants or loans. Also along the lines of providing incentives to generators is asking companies to sign agreements that they will participate in a waste reduction effort. This is a largely symbolic act, but may serve to alert corporations to the importance of the issue and to garner their support.

VII.3.5 Regulatory Measures

A number of existing federal and state laws require waste reduction and recycling or limit and control the disposal of hazardous waste. These Federal mandates include: The Resource Conservation and Recovery Act (RCRA), amended by the Hazardous and Solid Waste Amendments in 1984, which requires that all hazardous waste shipped off-site be accompanied by a manifest signed by the generator which includes a clause stating that the generator "has a program in place to reduce the volume or toxicity of such waste to the degree determined by the generator to be economically practical"; The State of California mandates include: Hazardous Waste Management Act of 1986 which restricts the disposal of liquid hazardous waste to land disposal facilities as of 1988 and restricts disposal of untreated waste as of 1990; the Hazardous Waste Control Act of 1979 which encourages recycling and waste exchange; and the Used Oil Recycling Act of 1978 which requires that used oil be collected and recycled to the maximum extent possible. In addition, other laws regulate the storage, handling, transportation and disposal of hazardous wastes. To be effective, however, laws must depend upon educational efforts and technical assistance programs which ensure that generators are both aware of regulatory requirements and are able to identify waste reduction opportunities.

Local governments can use their discretion to accelerate or extend the stringency of these programs. However, one should remember that it is easier to enforce technical standards as design requirements for new facilities rather than as retrofit criteria on existing facilities.

Local governments should make approval of a new generator's hazardous waste management plan a pre-requisite to a waste minimization loan, business license or use permit. Localities can also require all manifested generators to file the waste minimization plan mandated by the federal RCRA or face penalties. These plans could be used to monitor firms' progress in waste reduction and to enable the locality to provide specific encouragement and technical advice.

VII.3.6 Financing Options

For the financing of local government programs, several funding options at different levels of government currently exist. The DHS has a waste reduction grant program funded at $1 million per year (AB 685; Farr, 1985). The recipient must match at least part of the grant money. Localities can use the money collected from the 10% tax on off-site waste management facilities for funding additional programs (AB 2948; Tanner, 1986). Fees can also be added to permit renewals and applications for new permits and for industrial hazardous waste dischargers and generators. Fees should not be so high, however, that they encourage illegal generation and dumping of hazardous wastes.

During the 1987 state legislative session, AB 2490 (Killea, 1987) was passed. This legislation allows business organizations to meet with county representation to determine whether local businesses need a county hazardous materials consulting service. The bill allows counties to fund such a program through the collection of fees.

Local governments may consider other surcharges and fee programs to finance local waste minimization efforts. Throughout the Bay Area cities and counties have assessed surcharges on monthly household solid waste bills to finance household hazardous waste programs. A similar mechanism on solid

waste, sewer or water bills for businesses could be instituted to provide financial support for waste minimization programs.

A key point for selling waste minimization is that it does make economic sense and will pay off. Since small businesses have the most difficulty financing their own waste minimization programs special financial assistance programs may be useful. Helping businesses identify loan sources through the small business administration (SBA) and to develop local loan sources through banks may be an option that local governments should consider.

SB 788 (Garamendi, 1987) legislated the creation of a loan account for small business development corporations through the state office of small business. Funds can be made available to small hazardous waste generators through the development corporations with oversite by the Department of Health Services. Businesses must use these loan monies to finance projects and facilities that reduce the generation of hazardous waste.

Other options exist from cooperative ventures to tax and rebate systems. Variations on approaches can be developed to meet local, regional and state-wide needs. Implementation of policy recommendation twelve (see Chapter IX) should identify and define solutions for funding waste minimization and other hazardous waste programs.

TABLE VII-1

HAZARDOUS WASTE MANAGEMENT HIERARCHY
TECHNIQUES FOR SOURCE REDUCTION AND WASTE MANAGEMENT

1. Product Substitution
   *shift to product that results in lower hazardous waste output

2. Raw Material Substitution
   *shift to less hazardous materials
   *shift to process materials that result in lower hazardous waste output for same product

3. Process Modification
   *lower hazardous waste output from same product and same types of raw materials
   -- redesign process
   -- improved "housekeeping"

4. Recycling & Reuse (on site)
   *lowers net output of waste material

5. Recycling & Reuse (off site)
   -- shared central facilities
   -- third party recyclers
   -- waste exchanges

6. Onsite Treatment
   -- neutralization
   -- stabilization
   -- evaporation ("dewatering")
   -- incineration

7. Offsite Treatment
   -- neutralization
   -- stabilization
   -- evaporation
   -- incineration

8. Disposal
   -- residuals repositories

TABLE VII-2

ELEMENTS OF A VOLUME REDUCTION PLAN

I. Inventory: Raw products and waste sources.

- Material/waste balance
- Sources of chemical use and waste generation
- Points of waste discharge
- Chemical profile of waste (why is it hazardous)
- Disposition of wastes and disposal costs

II. Priority Framework

- Review chemical hazards
- Risk Assessment
- Identify criteria for importance
- Prioritize wastes for minimization

III. Alternative Process Description

- Identify Housekeeping/production changes for minimization
- Survey literature and equipment
- Cost estimation (include initial costs, amortization, depreciation, tax rebates, pay back potential)
- Selection of alternatives (prioritize and list conditions for adoption)

IV. Schedule and Targets

- Identify steps or phases for implementation
- Identify tasks and personnel assignments
- Set target dates for completion

V. Monitor and Evaluation

- Identify reporting procedures
- Establish evaluation protocol
- Establish outcome objectives and range of acceptability
- Educate and involve all facility personnel

Source: Ventura County Health Department, 1987

VIII. TRANSPORTATION OF HAZARDOUS WASTE

VIII.1 Introduction

A large portion of the hazardous waste generated in the Bay Area is transported off-site by trucks for treatment and disposal. Each locality experiences traffic due to local waste generation, its export or import for treatment or disposal, and waste passing through from sources outside the locality. In light of the potential for hazardous waste movement on local highways and roads, consideration of potential threats to public health and the environment from hazardous waste in transit is an essential component of a hazardous waste management plan.

The following sections will discuss issues of concern regarding the transport of hazardous wastes, existing ordinances, and localities' roles in regulating hazardous waste transport in their areas.

VIII.2 Issues of Concern Regarding Transportation of Hazardous Waste

The main issues in planning for safe transportation of hazardous wastes are routing and hours of transport. In addition, specific concerns of each locality need to be considered. A discussion of these is outlined below.

Routing: Truck travel in a city is subject to restrictions to posted truck routes and to weight limits established by the city. A city may post restrictions on truck traffic in certain areas (such as residentially zoned neighborhoods) due to concern for the residents in that area. Other criteria a locality may use to choose routes for vehicles carrying hazardous wastes include the following: All roadways used for hazardous waste transport should be constructed and maintained following applicable city, county or state design specifications regarding width of the road and vehicle weight allowance. The roads should be designed to insure good visibility and allow a uniform speed. Routes should not include steep grades which cause speed changes that can contribute to accidents.

Hours of Transport: Vehicles carrying hazardous wastes may be restricted from certain routes during specific hours of the day, such as highways during commute hours, to minimize potential accidents.

Specific Community Concerns: Each locality may have specific traffic situations which require unique regulations. Special attention should be paid to railroad crossings, tunnels, bridges and underground air vents. For example, the City of Oakland has an ordinance prohibiting the transport of "flammable liquids, explosives and other dangerous articles" through the city's Posey and Webster Street tunnels to Alameda Island. Due to the proximity of vents for BART and Muni systems in San Francisco, tank vehicles are restricted to crossing Market Street at specific intersections.

VIII.3 Existing Ordinances

Numerous federal and state agencies are responsible for enforcing a broad range of regulations directed at the transportation of hazardous materials, including hazardous wastes. Table VIII-1 shows an outline of the agencies responsible for hazardous materials and hazardous waste transport, their jurisdictions and a summary of their prevention activities. Generally speaking, the state and federal governments can preempt local authority on state and federal highways. The U.S. Department of Transportation has preemptive authority over local and state routing regulations when such regulations either conflict with federal regulations on the transportation of hazardous materials or interfere with interstate commerce. Federal regulations* define and categorize hazardous wastes, establish a uniform manifest system, establish a uniform marking system on the transport vehicles, and mandate specific responsibilities to the states. The federal Department of Transportation's Table of Hazardous Materials is used by California agencies as a basis for hazardous waste transport regulations.

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*Regulations relative to handling and transportation of hazardous waste are contained in part in the Code of Federal Regulations (CFR) No. 49, Parts 171-179, 260, and 263.

In California, all state and federal highways are under jurisdiction of the California Department of Transportation (CalTrans) with enforcement provided by the California Highway Patrol (CHP). California has adopted major portions of the federal Hazardous Materials Transportation Act (49 C.F.R.) into the California Vehicle Code. The vehicle code states that under certain conditions the transportation of hazardous materials on specific roads and highways may be prohibited for safety reasons by the California Highway Patrol, by a city, or by a county. The CHP maintains an ongoing program to inspect trucks on state highways at specified check points (generally weigh stations) to see that they are displaying proper placards and conforming to other state regulations regarding transport of hazardous waste.

On city streets, a city is free to designate routes for the transport of hazardous waste and to institute truck weight limitations. On state highways, local authorities can designate routes in tunnels and on bridges.

VIII.4 Local Government Role in Regulating Hazardous Waste Transportation

The issue of who has authority over routing ordinances within city limits is hazy. The law does not state that cities can propose routes on state highways within city limits and seek Caltrans approval, nor does the law explicitly prohibit local ordinances regulating transport on highways. Nevertheless, individual communities have begun establishing routes specifically for transport of hazardous materials both on and off highways within their jurisdiction.

Enforcement of local transportation regulations by the local police enforcement authority is constrained. First, transporters operate in more than one city or county. Local authorities would have difficulty identifying repeat violators from other jurisdictions. Second, since local officers may not be familiar with the federal Hazardous Materials Transportation Act, they would require special training currently not available to most localities to enable them to perform inspections. Lastly, in contrast to the CHP--which has the authority to inspect vehicles at specified check points--local enforcement officers need due cause to detain a vehicle. For example, violators of placarding regulations and leaking

containers are observable violations which local police could expect to identify and cite during routine patrol activities. Incomplete shipping papers, on the other hand, could not be observed and therefore would not be cause for a local enforcement officer to stop a moving vehicle.

While it is true that state and federal governments can preempt local regulations (as they have for explosives and radioactive materials), carefully thought out local plans can be implemented. To avoid preemption, routing plans must provide alternate routes and not simply redirect traffic to other locales nor unduly restrict commerce. The more cooperative a routing program is on a larger geographic basis, the more likely it is to survive a preemption challenge.

VIII.5 Inspection Program

The California Highway Patrol (CHP) administers the State inspection program on behalf of the DHS. The CHP reports that large numbers of violations are found during inspections of hazardous materials and hazardous waste carriers (Contra Costa County HWMP, March 31, 1988). It is a recommendation of this plan that inspections be conducted more frequently to ensure adherence to carrier laws and to provide adequate transportation safety. In addition, local police, fire and CHP should coordinate activities including more training for local enforcement agency personnel on regulations for transporting hazardous waste and materials.

VIII.6 Regional Planning

Planning routing alternatives on a large geographic basis is not only desirable from the stand point of preemption but also because it results in safe transportation. Coordinating route designations sub-regionally and on a regional basis leads to a better defined system. To this end, counties are encouraged to act as coordinator between cities. ABAG should act as a regional and sub-regional coordinator between counties, Cal Trans, the Metropolitan Transit Commission, the Highway Patrol and other transportation agencies.

TABLE VIII-1

HAZARDOUS MATERIALS (INCLUDING WASTE) TRANSPORTATION
AGENCY, JURISDICTION, AND PREVENTION ACTIVITIES SUMMARY

Agency	Jurisdiction	Prevention Activities
CHP: Cal. Highway Patrol	highway transportation	inspects carriers for compliance with proper storage, transportation, documentation; specifies routes, times for transportation of certain materials; new: licensing, inspection of transporters of haz. mats. (500 lbs. or more)
DHS: Cal. Dept. Health Service	hazardous wastes radioactive materials	issues registration for transport; inspects; technical assistance re: planning/operation of facilities; issues permits for use/operation of waste facilities.
State Fire Marshal	cargo and portable tanks for flammable/combustive liquids in excess of 120 gals.	inspects; certifies biannually; registers.
Cal/OSHA Div. Industrial Safety	liquid petroleum gas cargo tanks (except portable tanks/cylinders) pressure vessels	inspects and issues permits; reviews fabrication of pressure vessels and inspects.
RWQCB: Regional Water Quality Control Board	protection of water quality	oil spill prevention during transfer operations
Police/Sheriff Depts.	tank trucks carrying certain flammables, explosives and other chemicals	limited routing obtained through ordinances; varies widely among cities; cite violators under HMTA.

SOURCE: ABAG, San Francisco Bay Area Hazardous Spill Prevention and Response Plan, Volume I, February 1983.

IX. IMPLEMENTATION

IX.1 Introduction

Local government, with assistance from ABAG, will bear the primary responsibility for implementing effective hazardous waste and hazardous materials programs. The trend of increased responsibility at the local level is already evident in the San Francisco Bay Area. The Tanner legislation responsible for the county and regional hazardous waste management plan is another opportunity for local authority. This chapter will first describe the current status of hazardous materials and hazardous waste programs in the region, and then describe an action plan for implementation of the regional policies described in chapter I.

IX.2 Current Implementation Programs

An abundance of legislation regulating hazardous materials and hazardous waste have been put into law during recent years. Many of these laws have either mandated or given local governments the option of implementing these programs. In the Bay Area, counties and cities have taken on a wide range of programs to regulate hazardous materials and waste. To better understand current implementation programs in the region we need to become aware of laws that have given local governments authority to regulate hazardous materials and hazardous waste.

Technical Memo No. 1 (contained in Appendix 5) provides a description of various legislative authorities and identifies the implementing agencies. Table IX-1 provides a summary of implementation programs throughout the San Francisco Bay Area. This matrix does not cover all hazardous waste and materials legislation but a selection of those major laws that local governments implement. Upon review of Table IX-1 we see that some counties have a more centralized system of administering hazardous materials and waste laws while others are decentralized with city governments taking on an expanded role. Santa Clara County represents the most decentralized county of hazardous materials and waste programs within the Bay Area. The Santa

Clara County approach provides "home rule" local authority on the one hand but a difficult coordination problem on the other.

In contrast Contra Costa County has taken the lead in implementing programs through county agencies. The Contra Costa County approach reflects a long history of centralized authority. County government has usually maintained a strong role relative to cities in this jurisdiction. The County Hazardous Materials Commission has been providing direction for several years to establish policies and initiate county action to effectively implement hazardous materials and waste programs. Most other Bay Area County's programs for implementing hazardous materials and waste laws are somewhere between these centralized and decentralized approaches. A mix of program implementation agencies is usually the rule with the county health department acting in the largest role.

The role of fire departments and implementation of the Uniform Fire Code (UFC) brings up some areas of overlap. The UFC generally sets construction and maintenance standards for buildings to mitigate fire and explosion hazards. The UFC is divided into articles that address different aspects of code compliance. In combination with the building code, electrical code, plumbing code, etc., the fire code is used during the construction phase and later to assess the acceptability of various operations in pre-existing structures. In 1987 the Western Fire Chiefs Association adopted a new Article 80. Article 80 outlines compliance standards for hazardous materials. The new Article 80 is much more complete and incorporates many of the elements covered by existing State of California legislation. Thus the coordination of activities between local fire departments and other hazardous materials agencies will become more critical in the future. Potential overlap of responsibilities must be identified prior to implementation program development so that all hazardous materials programs are efficient and do not duplicate the efforts of other agencies.

IX.3 Implementation of the Regional Plan

Chapter I describes and discusses regional policy directions for managing hazardous wastes. In this section each policy will again be stated, followed by implementation actions. In general, ABAG will act as coordinator and

facilitator of regional needs and as a technical assistance advisor. Major emphasis will be on assisting local governments in their waste reduction efforts and facilitating interjurisdictional agreements for managing hazardous waste. ABAG will also act as a clearinghouse on grants and other funding options available to local governments to fund theirs and ABAG's implementation activities. The following implementation actions are recommended for each policy:

Policy 1:
ABAG, Bay Area counties, cities, special districts, industry and the public should work together to solve hazardous waste management problems.

Action 1.1
ABAG should establish a permanent standing committee of county, city and other interested representatives who shall be responsible for planning, directing and implementing the region's hazardous waste management plan.

Policy 2:
ABAG, counties, cities and special districts shall promote waste minimization as the preferred method of managing hazardous waste in the region.

Action 2.1
With the guidance of the ABAG committee as established in Action 1.1, ABAG should develop educational materials and guidelines to assist local governments in developing and carrying out waste minimization programs. ABAG should also develop model waste minimization plans for specific industries.

Action 2.2
ABAG should provide technical assistance for counties, cities, and special districts, enabling them to:

-Require new generator businesses to submit and implement waste minimization plans as a condition of approval for land use permits;

-Require existing generator businesses renewing business licenses or use permits to submit and implement waste minimization plans as a condition for receiving a business license or use permit;

-Inspect generator facilities to ensure compliance with their waste minimization program.

Action 2.3
ABAG should act as a regional information clearinghouse on waste minimization activities.

Action 2.4
ABAG should develop a model ordinance(s) with a series of options for local governments to implement waste minimization.

Policy 3:
ABAG shall encourage counties, cities and special districts to implement the following hazardous waste management hierarchy at all waste generator businesses and hazardous waste management facilities: source reduction, recycling, waste treatment, and residuals repository when required. Off-site recycling is preferable to on-site treatment and on-site treatment is preferred over off-site treatment. Maximum environmental protection shall be a primary determining factor in deciding to manage wastes on- or off-site.

Action 3.1
All counties, cities and special districts shall implement the hazardous waste management hierarchy in their publicly owned waste generation operations as well as all new waste generating businesses.

Action 3.2
ABAG, cities, counties, and the State shall encourage all military facilities within the region to implement the hazardous waste management hierarchy in the management of their wastes.

Policy 4:
In the siting of new hazardous waste management facilities, potential exposure of populations to hazardous waste shall be minimized.

Action 4.1
The health risk assessment process along with consideration of cumulative impacts shall be used to implement this policy in the siting of new hazardous waste management facilities.

Action 4.2
When siting new hazardous waste management facilities, the siting criteria developed for the regional plan shall be used as a guide by counties and cities in their siting decisions.

Policy 5:
A process must be developed to assure shared responsibility for the establishment of regional hazardous waste facilities throughout the region.

Action 5.1
ABAG should facilitate implementation of fairshare responsibility for hazardous waste facility siting throughout the region using interjurisdictional agreements where appropriate.

Action 5.2
ABAG shall explore the advantages and disadvantages of using a Joint Powers Agreement (JPA) such as the existing ABAG JPA as a regional alternative to the State siting appeals process.

Action 5.3
If a hazardous waste management authority is formed under ABAG's JPA, it shall develop a method to assure equitable facility distribution within the region.

Policy 6:
When environmentally sound and economically feasible, the preferred alternative for restoration of contaminated sites that require clean-up

shall be the use of on-site treatment methods rather than off-site treatment.

Action 6.1
ABAG shall take steps to encourage the DHS Toxic Substances Control Division (TSCD) to require on-site clean-up of abandoned hazardous waste sites whenever technically and economically feasible.

Policy 7:
Permanent local programs should be developed to reduce and manage the hazardous waste from households and small quantity generators (SQG).

Action 7.1
Local governments with ABAG's assistance should develop permanent programs to be regularly available for acceptance of household hazardous waste. If feasible, these facilities should be expanded to also meet the needs of small quantity generator businesses.

Policy 8:
ABAG and local governments shall encourage programs and facilities that provide for recycling of household and SQG wastes.

Action 8.1
ABAG should work with local governments to develop programs for recycling household and SQG wastes.

Policy: 9
The permit process for SQG and household waste transfer and recycling facilities should be streamlined at the federal and state level while insuring consistency with local goals and policies and protecting local government decision-making options.

Action 9.1
ABAG should take steps to encourage streamlining the state permitting process for these facilities so that development will increase.

Policy 10:

Educational programs and materials should be developed by ABAG for use in local educational programs targeting the public, generators and government facilities. The purpose of these efforts is to increase awareness of the problems and to facilitate solutions to hazardous waste management issues.

Action 10.1

The ABAG Training Institute shall continue and expand its hazardous materials/waste management curriculum.

Action 10.2

ABAG should develop publicity and educational materials for use by counties, cities and special districts within the region. These materials could also be made available to local governments outside of the ABAG region.

Action 10.3

ABAG will seek funds to develop educational materials for distribution to Bay Area governments.

Action 10.4

ABAG, in consultation with local governments, should act as regional coordinator for local government educational efforts/programs in order to minimize duplication of efforts.

Policy 11:

As a first priority, funds collected by jurisdictions from hazardous waste management facilities should be used to finance that jurisdiction's hazardous waste programs.

Action 11.1

As a minimum, counties or cities should levy a tax or fee proportionate to the amount of funding needed to finance hazardous waste management programs in the impacted area including a portion designated to fund regional hazardous waste management activities through ABAG.

Policy 12:

A study should be made of the possibility of increasing the cost of consumer products containing hazardous materials so that the price reflects the cost of disposal. This increment in price should be made available to local agencies for conducting hazardous waste reduction programs. In addition, further study of funding alternatives that incorporate incentives for waste reduction are required.

Action 12.1

ABAG shall work with the state legislature to develop a mechanism to apply a tax or fee on manufacturers or retailers of consumer products containing hazardous materials, and/or a tax on stores selling these products. The tax or fee would be rebated to counties where the items are sold and a portion would be made available to ABAG for financing regional management efforts.

Action 12.2

ABAG shall explore funding mechanisms for local governments and for ABAG which may include:

- -Revenues from taxes collected on hazardous waste facilities as authorized by the Tanner legislation
- -State legislation to provide funds for local and regional programs
- -Revenues from solid waste collection fees
- -Private funding institutions and private sector cooperative programs
- -Public institution grant programs

Action 12.3

Counties that receive the tax or fee shall implement permanent community education, and collection (recycling and disposal) programs for these products.

Policy 13:

Current and accurate data in managing and monitoring hazardous waste should be made available to local governments. This includes data on the generation, treatment, disposal, environmental impacts, and any proposals for new hazardous waste management facilities.

Action 13.1
ABAG should act as a data clearinghouse, providing updates of facility proposals in the region.

Action 13.2
ABAG should provide guidance and coordinate the three-year updates of the county and regional Tanner plans.

Policy 14:
Transportation of hazardous waste should be planned and coordinated on a regional and sub-regional basis.

Action 14.1
ABAG should act as a coordinator between local governments and agencies involved with transportation regulations.

Action 14.2
ABAG, cities and counties should define routing corridors for transport of hazardous wastes such that potential exposure is minimized. This plan should be reviewed and updated at least every five years.

TABLE IX - 1: SUMMARY OF LOCAL HAZARDOUS MATERIALS AND HAZARDOUS WASTE IMPLEMENTATION PROGRAM AGENCIES BY LEGISLATIVE AUTHORITY IN THE NINE SAN FRANCISCO BAY AREA COUNTIES

Legislative Authority: Hazardous Materials/Waste Laws	Alameda	Contra Costa	Marin	Napa	San Francisco	San Mateo	Santa Clara	Solano	Sonoma
1) Underground Storage Tanks • Sher AB 2239 • Cortese AB 2013	7 Cities Fire County Health	County Health	County Health	Environ. Health Deptartment	City/County Health	2 Cities Fire County Health	11 Cities Fire	1 City Fire Environmental Management	4 Cities Fire County Health
2) Waters: AB 2185 and 2187	6 Cities Fire County Health	County Health	1 City Fire County Health	Environ. Health Department	County/City Health	1 City Fire County Health	11 Cities Fire* County Health*	Environmental Management	4 Cities Fire County Fire Svcs
3) La Follette: AB 3777	6 Cities Fire County Health	County Health	1 City Fire County Health	Environ. Health Department	County/City Health	1 City Fire County Health	11 Cities Fire* County Health*	Environmental Management	4 Cities Fire County Fire Svcs
4) SARA Title III	Overlaps state laws regulating hazardous materials; coordination with local hazardous material programs are still being worked out.								
5) Uniform Fire Code	Local Fire	Local Fire	Local Fire	Local Fire	Local Fire	Local Fire	Local Fire	Local Fire	Local Fire
6) Tanner AB 2948	County Waste Management Authority	County Community Dev. Dept.	County Planning	Environ. Health Department	Solid Waste Management Program	County Planning & Health	County Executive	County Environmental Management	County Health
7) Hazardous Waste Control Law	County Health MOU	County Health MOU	State	State	State	County Health MOU	County Health MOU	State	State
8) Tanner AB 1809 Household Hazardous Waste	County Health & Cities	County Health & Cities	County Health & Cities	Environmental Health & Cities	County Health	County Health & Cities	County Health & Cities	County Health & Cities	County Health & Cities
9) Industrial Waste Pretreatment Programs	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties	Local sewerage agencies: cities, special districts, counties

*In Santa Clara County the County Health Department is the implementing agency for AB 2185-87/3777 and the city fire departments are the administrating agencies.

X. Environmental Impact Report

X.1 Overview

The Environmental Impact Report for the San Francisco Bay Area Regional Hazardous Waste Management Plan (RHWMP), as prepared to meet the requirements of the California Environmental Quality Act (CEQA), is contained in this chapter. In recognition of the substantial overlap of information between the RHWMP and the EIR, the environmental document has been integrated into the Plan. CEQA Guidelines provide for EIRs to be included in General Plans, or elements thereof, if the document addresses all of the content requirements of an EIR and includes a special section identifying the parts of the General Plan document that cover the appropriate CEQA topics. The RHWMP is conceptually similar to a General Plan-Hazardous Waste Element. Integration of the contents avoids redundancy in the preparation of the documents. Section X.2 of this chapter provides a list of the required contents of a Draft EIR and the corresponding sections in the RHWMP. The annotation of that list serves as an index to where in the Plan discussion of each of the required elements can be located.

CEQA also recognizes that an EIR on an element of a General Plan need not be as specific as the EIR associated with a proposed project but rather can provide more of an overview. The information presented is intended to provide such an overview of the environmental impacts associated with the operation of facilities which handle, store, treat, or dispose of hazardous wastes.

An EIR for any specific hazardous waste management project would have details regarding all locational and operational aspects of the proposed facility. The information presented here is intended to assist developers, local agency and county staffs, and decisionmakers in better understanding the scope of issues and questions that a project-specific EIR should address. The discussion of the general types of hazardous waste facilities and some of their operational features is found in Section X.4 of this chapter, while Section X.5 contains a discussion of the impacts and mitigations associated with these facilities.

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An EIR for any specific hazardous waste management project would have details regarding all locational and operational aspects of the proposed facility. The information presented here is intended to assist developers, local agency and county staffs, and decisionmakers in better understanding the scope of issues and questions that a project-specific EIR should address. The discussion of the general types of hazardous waste facilities and some of their operational features is found in Section X.4 of this chapter, while Section X.5 contains a discussion of the impacts and mitigations associated with these facilities.

X.2 Contents of the Draft EIR on the RHWMP

The required contents of of a Draft EIR on a general planning document, such as the RHWMP, are presented in Table X-1 with cross-references to the RHWMP Section and location where these topics are covered.

TABLE X-1 ENVIRONMENTAL IMPACT REPORT INDEX

EIR Element	RHWMP Section No. and Title	Page
Information Document	X Environmental Assessment	
	X.1 Overview	X-1
Table of Contents	X Environmental Assessment	
	X.2 Contents of the Draft EIR on the RHWMP	X-2
Project Description	I Introduction	
	I.1 Purpose and scope	I-1
	I.2 Regional Plan Structure & Its Relationship to County Hazardous Waste Plans	I-2
	I.3 Goals and objectives	I-4
	I.4 Bay Area Hazardous Waste Management Plan Policies	I-5
	X Environmental Assessment	
	X.3 Plan Description	X-4
Environmental Setting	II Current Waste Generation (1986)	
	II.2 Data sources and methods	II-1
	II.3 Wastes shipped off-site	II-3
	II.4 Wastes managed on-site	II-4
	II.5 Small quantity generators	II-7
	II.6 Household hazardous wastes	II-8
	II.7 Total industrial and household hazardous waste stream	II-9
	II.9 Designated and nonhazardous wastes shipped to hazardous waste facilities	II-10
	II.10 Hazardous waste exports and imports	II-11
	II.11 1986 Waste generation summary	II-12
	IV Existing Hazardous Waste Management Facilities	
	IV.2 Existing facilities for off-site wastes	IV-1
	IV.3 Key hazardous waste management facilities	IV-9
	V Hazardous Waste Management Facility Needs Analysis for the Year 2000	
	V.2 Projected off-site capacity requirements	V-2
	V.3 Projected off-site treatment capacity	V-3
	V.4 Off-site facility capacity needs determination	V-4
	V.5 Regional summary of future hazardous waste management needs	V-5
	X Environmental Assessment	
	X.4 Project Setting	X-6
Environmental Impacts	VI Siting of New Off-site Hazardous Waste Facilities	
	VI.2 Siting Goals	VI-1
	VI.3 Siting Process	VI-3
	VI.4 Siting Criteria	VI-4

TABLE X-1 ENVIRONMENTAL IMPACT REPORT INDEX (continued)

EIR Element	RHWMP Section No. and Title	Page
	X Environmental Assessment	
	X.5 Impact analysis and mitigation measures	X-9
Mitigation of Environmental Impacts	I Introduction	
	I.2 Goals and objectives	I-4
	I.4 Bay Area Hazardous Waste Management Plan Policies	I-5
	VII Hazardous Waste Reduction	
	VII.2 Goals, benefits and potential for hazardous waste reduction	VII-1
	VII.3 Components of a successful local government program and financing options	VII-5
	VIII Transportation of Hazardous Waste	
	VIII.2 Issues of concern	VIII-1
	VIII.3 Existing ordinances	VIII-2
	VIII.4 Local government role in regulating hazardous waste transportation	VIII-3
	X Environmental Assessment	
	X.5 Impact analysis and mitigation measures	X-14
Unavoidable Effects	III Projected Waste Generation In the Year 2000	
	III.7 Summary	III-6
	VI Siting of New Off-site Hazardous Waste Management Facilities	
	VI.4 Siting criteria (conditional criteria)	VI-7
	X Environmental Assessment	
	X.6 Significant unavoidable impacts	X-1
Alternatives	X Environmental Assessment	
	X.7 Analysis of alternatives	X-1
Short-term Uses versus Long-term Productivity	III Projected Waste Generation In the Year 2000	
	III.1 Introduction	III-1
	III.2 Hazardous waste projections for off-site managed wastes	III-1
	III.3 Household hazardous waste projections	III-6
	X Environmental Assessment	
	X.8 Relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity	X-42
Growth Inducing Impacts	X Environmental Assessment	
	X.9 Growth inducing impacts	X-42
Cumulative Impacts	X Environmental Assessment	
	X.10 Cumulative impacts	X-44
Insignificant Effects	X Environmental Assessment	
	X.11 Effects found not to be significant	X-45
Organizations and Persons Consulted	Appendix 1: List of Task Force Members	A-1

X.3 Plan Description

Fourteen policies are proposed to implement the Regional Hazardous waste Management Plan (RHWMP). Each policy includes a series of actions to carry out the policies. A complete description of the recommendations appears in Chapter I with implementation actions in Chapter IX of the RHWMP. The fourteen policies recommended are presented in Table X-2.

TABLE X-2. RHWMP RECOMMENDATIONS

Policy	Description
Policy 1	Bay Area counties, cities, special districts, industry and the public should work together to solve hazardous waste problems.
Policy 2	ABAG, counties, cities and special districts shall promote waste minimization as the preferred method of managing hazardous wastes in the region.
Policy 3	ABAG shall encourage counties, cities and special districts to implement the hazardous waste management hierarchy at all waste generator businesses and hazardous waste management facilities with maximum environmental protection as the primary determining factor in managing wastes on- or off-site.
Policy 4	Potential exposure of populations to hazardous waste shall be minimized when siting new hazardous waste management facilities.
Policy 5	A process must be developed to assure shared responsibility for the establishment of regional hazardous waste management facilities throughout the region.
Policy 6	On-site treatment methods for clean-up of contaminated sites shall be implemented when environmentally sound and economically feasible.
Policy 7	Permanent local programs should be developed to reduce and manage hazardous wastes from household and small quantity generators.
Policy 8	ABAG and local governments shall encourage programs that provide for recycling of household and SQG wastes.
Policy 9	The permit process for SQG and household waste transfer and recycling facilities should be streamlined to encourage development of these types of facilities.
Policy 10	Hazardous waste educational programs and materials targeting the public, generators and government facilities should be developed to increase awareness of problems and to facilitate solutions to hazardous waste management issues.
Policy 11	The first priority for funds collected from hazardous waste management facilities should be to finance that jurisdiction's hazardous waste management programs.

TABLE X-2. RHWMP RECOMMENDATIONS (continued)

Policy	Description
Policy 12	Legislation and other alternatives should be investigated to fund disposal of hazardous waste management programs.
Policy 13	Current and accurate data on managing and monitoring hazardous wastes should be made available to local governments. This includes data on generation, treatment, disposal and the environmental impacts of hazardous waste.
Policy 14	Transportation of hazardous wastes should be planned and coordinated on a regional and sub-regional basis.

X.3.1 Characteristics of Facilities that Manage Hazardous Waste

General descriptions of the basic types of facilities for the management of hazardous wastes are provided in Part J of the Technical Reference Manual to DHS' Guidelines for the Preparation of Hazardous Waste Management Plans (DHS 1987). Facility descriptions are summarized below, and in Table X.3.

X.3.1.1 Waste Transfer and Storage Facilities (Transfer Stations)

Storage and transfer facilities serve as collection stations for small quantities of waste, combining like wastes when the quantities become large enough to be economically shipped to a treatment or recycling facility. Usually located in an urban-industrial area, near sources of waste generation; occasionally located in a rural. Wastes are separated by physical and chemical properties and are stored away from incompatible wastes until being removed for treatment or recycling.

X.3.1.2 Treatment Facilities (Example: Aqueous Waste Treatment Facility)

An Aqueous treatment facility visually resembles a municipal sewage treatment plant. Water contaminated with hazardous waste arrives at the facility and can undergo various processes to remove heavy metals, reactive ions, and organic matter. Acid and alkaline wastes undergo pretreatment in separate unloading basins. The segregated wastes are then neutralized and/or oxidized to precipitate metals or to detoxify selected chemicals. Treated wastewater effluent is discharged either to a sewer or to an evaporation pond. The sludges that are formed are sent to an incinerator or to a biological waste converter, or are stabilized for subsequent land disposal.

TABLE X-3 PRINCIPAL CHARACTERISTICS OF TYPICAL HAZARDOUS WASTE TREATMENT FACILITIES

Facility Category	Annual Amount (1,000 tons)	Weekly Amount (1,000 tons)	Minimum No. Incoming Vehicls/Week		Land Area (acres)	No. of Empolyees	Outside Appearance
			Trucks[a] (4,000 gal. each)	Railcars[b] (8,000 gal. each)			
Solidification or Stabilization							
Small	5–15	16–47	4–12	2–6	1–2	5–10	Industrial building with silos nearby for storage of dry chemicals; and
Large	50–100	160–310	40–78	20–39	5–10	26–30	Warehouse-style building with trucks entering to transfer material.
Incineration							
Small	5–10	12–76	3–19	2–10	4–6	2–3	Tall smokestack which emits steam; and Visible storage tanks for waste; and
Large	60–70	140–530	35–130	13–65	8–10	2–12	Warehouse-style building with trucks entering to transfer material.
Repository for Treated Residues							
Small (25–50 yrs)	10–20	No liquids	9–18	5–9	50–100	15–20	Area surrounded by five-foot high landscaped berm partially covered by quonset-hut shaped moveable roof.
Large (50–60 yrs)	40–60	No liquids	36–54	18–27	200–300	20–25	
Transfer Station							
Small	10–15	23–110	6–23	3–14	1–3	2–5	Warehouse-style building with trucks entering to transfer material; and
Large	30–40	70–300	18–75	9–38	5–10	5–10	Storage tanks near building surrounded by dikes.
Treatment (e.g. aqueous waste treatment)							
Small	10–12	46–65	12–14	6–7	3–5	15–20	Raised lagoons or holding basins with storage tanks near a few buildings; and surface aerators operating in open tanks/ basins; &
Large	100–200	460–920	120–230	60–120	10–30	35–40	Warehouse-style building with trucks entering to transfer material.
Recycling (e.g. liquid organics recovery)							
Small	10–15	23–110	6–28	3–14	1–3	15–20	Appearance of small refinery, distillation towers, pipelines, and many storage tanks; and
Large	30–45	70–300	18–75	9–38	5–10	45–60	Two industrial buildings; and Visible dikes surrounding tank storage area; & Occasional visible venting of steam from distillation equipment; and Warehouse-style building with trucks entering to transfer material.

[a] Assumes that all wastes are transported by trucks.
[b] Assumes that all wastes are transported by train.

X.3.1.3 Recycling (Example: Organics Recovery Facility)

Facilities for the recovery of liquid organics, solvent distillation and oil refining have many similarities to a small refinery or petrochemical plant. Liquid hazardous wastes arriving at the facility are analyzed at an on-site laboratory to identify those constituents valuable enough for recycling through reclamation, incineration or conversion to usable or stable residues. Solvents and oils are separated and clarified by physical processes such as distillation/ condensation and filtration, respectively. Toxic vapors are destroyed by incineration or collected on adsorbents. The purified solvents and oils are stored, recycled, blended into fuels, or shipped out as industrial raw materials. Residues or sludges from this facility are incinerated, extracted for metals, or "stabilized" prior to land disposal. Wastes remaining after recovery procedures have been completed are then sent to an aqueous waste treatment facility for further processing.

X.3.1.4 Solidification and Stabilization Facilities

Liquid wastes and sludges that cannot be recycled, treated, or destroyed can be solidified or stabilized by addition of special additives, such as lime and fly ash, to inorganic sludges. Other wastes can be encapsulated in asphalt or plastic (polymer) coatings for lengthy storage or ultimate retrieval. Before disposal, any solidified waste should pass a standardized leachate test to ensure nonmigration of harmful constituents after placement in a residuals repository.

X.3.1.5 Incinerators

Organic liquids and solids that cannot be reclaimed can be burned in incinerators. Liquid feedstreams are filtered and solids shredded prior to entry of the wastes into the incinerator. Satisfactory destruction efficiency requires adequate temperature, time and turbulence. Incinerators, therefore, usually include primary heating and secondary afterburner zones. A fixed hearth burner with liquid injection is better suited to liquids, while a rotary kiln has the advantage of good mixing and residence time for solid hazardous wastes. The recovery of heat as process steam or the cogeneration of electricity may reduce the cost of incineration.

X.3.1.6 Residuals Repository

A residuals repository can only be sited in an area that meets the geologic and other requirements of the State Water Resources Control Board. Limitations on the types of materials that this facility could accept are:

- Only solid materials resulting from the treatment of hazardous wastes are acceptable:
- No free liquids would be accepted:
- Hazardous organic wastes would not be acceptable unless stabilized or solidified and encapsulated.

Materials are stored in large cells, some of which have movable roofs to protect the residues from wet weather or to store materials that might be valuable enough to recover in the future.

X.4 Project Setting

The San Francisco Bay Area encompasses 7,000 square miles in nine counties with a population of 5.7 million persons in 1987. The region includes the San Francisco Bay basin beginning at the Golden Gate, and extending upstream on the Sacramento River to Chipps Island. Four counties are situated in the North Bay: Marin, Napa, Solano and Sonoma; two in the East Bay: Alameda and Contra Costa; and three on the South Bay: San Francisco, San Mateo and Santa Clara; with population and industry most concentrated in Santa Clara, Alameda and Contra Costa Counties. The Bay basin is bounded by the Santa Cruz Mountains to the west, the Diablo Range to the East and Bayside foothills to the north and northeast. Inland valleys include the Santa Clara Valley to the south, the Napa and Sonoma Valleys to the north and the Livermore Valley to the east--all of which are significant agricultural areas. The distribution of land types in the San Francisco Bay Region (Brown and Kockleman, 1983) is:

Province	Area (mi^2)	Percentage
Estuary	240	3
Coastal Strip	175	3
Lowlands	2,260	32
Hillsides and uplands	4,293	62
Total	6,968	100

The Diablo Range is largely inaccessible beyond its foothills. Because of sparse rainfall, it consists primarily of grasslands and brush. The Santa Cruz Mountains and Bayside foothills in the North Bay include rolling grassland foothills and steep slopes covered with brush, mixed hardwoods, and some areas of dense redwoods and Douglas fir. Both mountain ranges include active earthquake faults and areas of geologic instability. The Coastal strip covers 3% of the region including the baylands which are made up of nearshore shallow areas, vast salt evaporation ponds and remnant areas of salt- and brackish-water marshes. Development pressure on the baylands and the lowlands has been historically intense-particularly for commercial and industrial interests. The Bay forms an integral part of the estuary for the Sacramento and San Joaquin Rivers draining the central valley of California and supports significant ecologically diverse fish and wildlife populations.

The Bay Region's climate is Mediterranean, with warm dry summers and mild wet winters. Rainfall ranges from an average of 12 inches a year in San Jose to over 60 inches in parts of the Santa Cruz Mountains.

Regional growth patterns, population and economic characteristics are comprehensively described in ABAG's Regional Plan 1980 (ABAG 1980) and Projections '87 (ABAG 1987) and are herein incorporated by reference. The physical, natural and cultural environments for each Bay Area County are described in the various County Hazardous Waste Management Plans (HWMP) and associated Draft EIRs which are listed in Table X-4 and also incorporated by reference. A composite of these documents provides a comprehensive picture of the region's existing physical, natural and cultural environments.

X.5 Impact Analysis and Mitigation Measures

Descriptions of the policy actions, associated environmental, institutional/financial, economic and social impacts are presented in Table X-5. Appropriate mitigation measures to minimize the significant effects are also presented in Table X-5. As required by CEQA, this discussion assesses the significant environmental effects of the RHWMP which in summary are:

- physical resources,
- reduced health and safety risks from hazardous wastes, and
- increased agency/local government staffing and coordination to implement RHWMP.

TABLE X-4. Draft County Hazardous Waste Management Plans and EIRs

Document	Status
Alameda County Draft Hazardous Waste Management Plan Draft Environmental Impact Report, EIP Associates	March 1988 May 1988
Contra Costa County Draft Hazardous Waste Management Plan Draft Environmental Impact Report, California Hazardous Waste Planners	March 1988 August 1988
Marin County Draft Hazardous Waste Management Plan Draft Environmental Impact Report, California Hazardous Waste Planners	March 1988 April 1988
Napa County Draft Hazardous Waste Management Plan and Environmental Impact Report, Engineering-Science, Inc.	March 1988
San Francisco County Draft Hazardous Waste Management Plan Draft Environmental Impact Report, Bendix Environmental Resources	March 1988 *(Sept. 1988)*
San Mateo Draft County Hazardous Waste Management Plan Draft Environmental Impact Report, Thomas Reid & Assoc.	March 1988 October 1988
Santa Clara County Draft Hazardous Waste Management Plan Draft Environmental Impact Report, ESA Planning and Environmental Services	March 1988 July 1988
Solano County Hazardous Waste Management Plan Draft Environmental Impact Report, Brown, Vence & Assoc.	March 1988 May 1988
Sonoma County Hazardous Waste Management Plan and Environmental Impact Report, CH2M Hill Inc./Exceltech Inc./ Herzog & Assoc.	March 1988

For the purposes of the EIR the Regional Hazardous Waste Management Plan recommendations are divided into two categories:

- management planning recommendations
- facility construction and program implementation recommendations

X.5.1 Management Planning Recommendations

The first type, management planning recommendations, includes criteria and standard development, ordinance and model control plan development, public education/information, and continuing integrated regional hazardous waste management planning. Recommendations of this type are: Policy 1, Policy 2,

Policy 6, Policy 8, Policy 10, Policy 11, Actions 12.1 / 12.2, and Policy 13. The significant environmental effects of these recommendations are indirect improvements to the quality of air, water and physical resources derived from a trend towards a higher degree of environmental protection and reduction of improper waste disposal methods. Expansion of the information base and development of appropriate tools and techniques through the planning process enabling decision-makers to make sound judgments toward the protection of environmental resources and public health and safety in the region.

Indirect environmental benefits should also result from improvements in the efficiency and effectiveness of county hazardous waste management programs after consolidation and coordination of activities currently dispersed and potentially duplicated among a large number of agencies. Examples of activities where coordination and information exchange would reduce duplication of effort and promote consistent criteria and standards are:

- model ordinances to implement waste minimization
- model waste minimization plans targeting specific industries
- information clearinghouse on waste minimization activities, educational programs and facilities updates

X.5.2 Facilities Construction and Program Implementation Recommendations

The second type of recommendation would ultimately result in the siting and eventual construction of hazardous waste management facilities or the implementation of action programs to reduce, recycle and/or treat wastes by waste generators. Recommendations of this type are: Policy 3, Policy 4, Policy 5, Policy 7, Action 12.3 and Policy 14.

These recommendations will have significant effects as they are carried out by local governments and the private sector. State, regional and local standards and objectives govern the siting and construction process for new hazardous waste management facilities. These requirements are based on protection of public health and the natural/physical environment. The RHWMP recommends overall criteria for facilities siting; however each proposed hazardous waste management facility must be individually evaluated for site-specific conditions and types of materials and risks involved.

Other significant environmental effects are the incremental changes in local air emissions, discharges to sanitary sewers, alteration of on-site physical resources and need for increased public services associated with operation of new hazardous waste management facilities. Implementation of action programs - such as requirements for waste minimization plans from generator businesses and encouragement of on-site recycling or treatment facilities also face the same types of considerations. New facilities and implementation of action programs have other tangible effects. Table X-4 lists the EIR documents prepared (or in preparation) for hazardous waste management in the Bay Area counties, which are herein incorporated by reference for the Draft EIR on the RHWMP. The EIR documents listed discuss environmental effects of new facilities and programs per se. The reader is referred to those environmental documents for local assessment of needs and priorities. As the actions recommended are carried out by local governments and private industry and become site-specific project proposals, those agencies will become Lead Agencies under the definitions of CEQA. The site-specific environmental effects of the proposed project would then be assessed as required by State Law.

X.6 Significant Unavoidable Impacts Associated with Implementation of the Plan and Mitigation Measures Proposed to Minimize the Significant Effects

X.6.1 Construction Effects

Implementation of the hazardous waste management hierarchy--leading to construction of new on-site recycling and/or treatment facilities, as well as new off-site recycling and/or treatment facilities, would indirectly cause adverse environmental effects of a short-term, localized nature related to facilities construction. These include the dust, surface runoff, noise and energy-use related effects associated with construction activities. Other effects may include the alteration of land (and in some cases - changes of land use) and visual impacts associated with providing new or expanded facilities. These effects can be minimized by noise and dust abatement measures, careful engineering design and siting criteria (such as the RHWMP siting criteria), and surface runoff control measures such as those promulgated in county and city Erosion Control Ordinances and the ABAG Manual of Standards for Erosion Control Measures.

TABLE X-5

SAN FRANCISCO BAY AREA
REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN

SUMMARY OF POLICY DESCRIPTIONS,
IMPACT EVALUATION AND MITIGATION MEASURES

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (c

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 1. BAY AREA COUNTIES , CITIES, SPECIAL DISTRICTS, INDUSTRY AND THE PUBLIC SHOULD WORK TOGETHER TO SOLVE HAZARDOUS WASTE PROBLEMS								
ACTION 1.1 Establish a permanent committee to plan, direct and implement the region's Hazardous Waste Management Plan	ABAG should establish a permanent standing committee that will be responsible for planning, directing and implementing the Regional Hazardous Waste Management Plan	ABAG, Bay Area counties, cities and other interested agency, public and private sector representatives	1989-90	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS
POLICY 1. BAY AREA COUNTIES, CITIES, SPECIAL DISTRICTS, INDUSTRY AND THE PUBLIC SHOULD WORK TOGETHER TO SOLVE HAZARDOUS WASTE PROBLEMS			
Air Quality • Would improve air quality indirectly--provides data to make informed decisions. Water Quality • Would improve water quality indirectly--provides data to make informed decisions. Physical/Natural Resources • Would benefit physical/natural resources indirectly as air and water quality are improved. Energy • No impacts Amenities • Would affect amenities indirectly; highly dependent on nature of actions taken.	Air Quality • No mitigation required Water Quality • No mitigation required Physical/Natural Resources • No mitigation required Energy • No mitigation required Amenities • No mitigation required	Financial • Costs would be borne by ABAG, Bay Area counties, cities and special districts from one or more of the funding methods identified in Policies 11 and 12. Institutional • May result in higher level of cooperation among agencies, local jurisdictions and generators. • May improve information exchange, usability and applicability of data on facility planning, design and inpsection criteria.	Housing Supply • No significant impacts Physical Mobility • No significant impacts Health and Safety • Reduced health and safety risks from improper disposal of hazardous wastes. Sense of Community • No significant impacts Urban Patterns • No significant impacts Production of Goods and Services • No significant impacts Income and Investment • No significant impacts Consumer Expenditures • No significant impacts

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 2. ABAG, COUNTIES, CITIES AND SPECIAL DISTRICTS SHALL PROMOTE WASTE MINIMIZATION AS THE PREFERRED METHOD OF MANAGING HAZARDOUS WASTE IN THE REGION								
ACTION 2.1 Develop educational materials and guidelines for hazardous waste minimization programs. Develop model waste minimization plans for	ABAG, with the guidance of the committee established in Action 1.1, should develop educational materials and guidelines to assist local governments in developing and carrying out waste minimization programs. ABAG should also develop model waste minimization plans for specific industries.	ABAG and local governments	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
ACTION 2.2 Provide technical assistance to local jurisdictions for implementation of waste minimization plans in local regulatory activities	ABAG should provide technical assistance to counties, cities and special districts, enabling them to: • Require new generator businesses to submit and implement waste minimization plans as a condition of approval for land use permits. • Require existing generator businesses renewing business licenses or use permits to submit and implement waste minimization plans as a renewal condition for business licenses or use permits. • Inspect generator facilities to ensure compliance with their waste minimization program.	ABAG	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
ACTION 2.3 Establish a regional information clearinghouse on waste minimization activities	ABAG Should act as a regional information clearinghouse on waste minimization activities	ABAG	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
ACTION 2.4 Develop a model ordinance to implement hazardous waste minimization	ABAG should develop a model ordinance(s) with a series of options for local governments to implement waste minimization.	ABAG	1989-91	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS
POLICY 2. ABAG, COUNTIES, CITIES AND SPECIAL DISTRICTS SHALL PROMOTE WASTE MINIMIZATION AS THE PREFERRED METHOD OF MANAGING HAZARDOUS WASTE IN THE REGION			
Air Quality • Would improve air quality indirectly--guidance material would provide data to make informed decisions and approriate regulatory actions.	Air Quality • No mitigation required.	Financial • Costs would be borne by Bay Area counties, cities and special districts from one or more of the funding methods identified in Policies 11 and 12.	Housing Supply • No significant impacts Physical Mobility • No significant impacts
Water Quality • Would improve water quality indirectly--guidance material would provide data to make informed decisions and approriate regulatory actions.	Water Quality • No mitigation required.	Institutional • May result in higher level of cooperation among agencies, local jurisdictions and generators. • May improve information exchange, usability and applicability of data on facility planning, design and inpsection criteria.	Health and Safety • Reduced health and safety risks from improper disposal of hazardous wastes. Sense of Community • No significant impacts
Physical/Natural Resources • Would benefit physical/natural resources indirectly as air and water quality are improved.	Physical/Natural Resources • No mitigation required.		Urban Patterns • No significant impacts
Energy • No significant impacts	Energy • No mitigation required.		Production of Goods and Services • No significant impacts
Amenities • Would affect amenities indirectly; highly dependent on nature of actions taken.	Amenities • No mitigation required.		Income and Investment • No significant impacts Consumer Expenditures • No significant impacts

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 3. ABAG SHALL ENCOURAGE COUNTIES, CITIES AND SPECIAL DISTRICTS TO IMPLEMENT THE HAZARDOUS WASTE MANAGEMENT HIERARCHY AT ALL WASTE GENERATOR BUSINESSES AND HAZARDOUS WASTE MANAGEMENT FACILITIES WITH MAXIMUM ENVIRONMENTAL PROTECTION AS THE PRIMARY DETERMINING FACTOR IN MANAGING WASTES ON- OR OFF-SITE.								
ACTION 3.1 All counties, cities and special districts shall implement the hazardous waste management hierarchy in their publicly-owned waste-generation operations, as well as all new waste-generating operations.	Management hierarchy (preference for handling/disposal of hazardous wastes): 1. Source reduction – product substitution – raw material substitution – process modification(s) 2. On-site recycling 3. Off-site recycling – recycling businesses – hazardous waste exchange (DHS) 4. On-site waste treatment 5. Off-site waste treatment 6. Residuals repository (when required)	Bay Area counties, cities and special districts	Continuous	County Hazardous Waste Management Plans	Undetermined	Undetermined	County/city General Funds and/or permit fees	County Hazardous Waste Management Plans
ACTION 3.2 ABAG, counties, cities and the State shall encourage all military facilities within the region to implement the hazardous waste management hierarchy in the management of their wastes.	Management hierarchy (preference for handling/disposal of hazardous wastes): 1. Source reduction – product substitution – raw material substitution – process modification(s) 2. On-site recycling 3. Off-site recycling – recycling businesses – hazardous waste exchange (DHS) 4. On-site waste treatment 5. Off-site waste treatment 6. Residuals repository (when required)	ABAG, Bay Area counties, cities and special districts in conjunction with local military facilities	Continuous	Not applicable	Undetermined	Undetermined	Not applicable	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS

POLICY 3. ABAG SHALL ENCOURAGE COUNTIES, CITIES AND SPECIAL DISTRICTS TO IMPLEMENT THE HAZARDOUS WASTE MANAGEMENT HIERARCHY AT ALL WASTE GENERATOR BUSINESSES AND HAZARDOUS WASTE MANAGEMENT FACILITIES WITH MAXIMUM ENVIRONMENTAL PROTECTION AS THE PRIMARY DETERMINING FACTOR IN MANAGING WASTES ON- OR OFF-SITE.

Air Quality (site specific)

- New emissions associated with construction/operation of new transfer, recycling or treatment facilities.
- Changes in levels and types of on-site emissions from process modifications (for source reduction).
- Increases in on-site emissions associated with new recycling or waste treatment processes.

Water Quality (site specific)

- Changes in levels and types of on-site discharges from process modifications (for source reduction).
- Increases in on-site discharges associated with new recycling or waste treatment processes.
- New discharges associated with construction/operation of new transfer, recycling or treatment facilities.
- Long-term improvement in regional surface and groundwater quality through reduction of improper hazardous waste disposal.

Physical/Natural Resources

- Depending on on-site waste and treatment processes, would generate increased dissolved and solid sewage materials requiring coordination with local sewage treatment facilities.
- Long-term improvement in physical resources through reduction of improper hazardous waste disposal methods.

Energy (site specific)

- Changes in on-site energy usage associated with process modifications (for source reduction).
- Increases in on-site energy usage associated with new recycling or waste treatment processes.
- Increased energy usage associated with construction/operation of new transfer, recycling or treatment facilities.

Amenities

- Facility construction, operation and processses (including modifications) may have adverse visual, odor and noise effects.
- Long-term improvement in local amenities through reduction of improper hazardous waste disposal methods.

Air Quality (site specific)

- Control fugitive dust during construction by periodic wetting of work area or restriction of earth-moving during high-wind periods.
- The BAAQMD would determine, on a case-by-case basis, the need for modeling of emissions concentrations of criteria/non-criteria polllutants, and risk assessment. Direct emissions, indirect emissions, and proximity to sensitive receptors would be considered.
- Facilities operations, particularly of an incinerator, may be reduced or halted if weather conditions prevent effective ventilation of air-borne pollutants.
- Emissions offsets may be required by the county. Specific offset acitons will be determined on a case-by-case basis.

Water Quality (site specific)

- Apply RHWMP siting criteria for all new facilities (refer to Action 4.2).
- Prepare site-specific EIR where impacts may be significant.
- Install impervious surfaces + berms in TSD facilities where haz. wastes are handled/stored to isolate from surface/groundwater. Direct all storm runoff from contained areas to impervious storage area with 100-yr storm capacity ; test and treatment runoff as necessary.

Physical/Natural Resources

- Apply RHWMP siting criteria for all new facilities (refer to Action 4.2).
- Prepare site-specific EIR where impacts may be significant.

Energy (site specific)

- Optimize facility design to recycle materials and use less energy-intensive processes, where possible.
- Use steam cogneration and/or waste heat from incineration or refining/reclamation processes to heat spaces or water elsewhere on site.

Amenities

- Use RHWMPsiting criteria for new facilities
- Facility construction and operation plans should meet local city/county criteria for visual compatibility and to control noise, vibration, light/glare, and shadowing
- Prepare site-specific EIR where impacts may be significant.

Financial

- Specific fiscal effects depend on choice of financing mechanism: county/city general funds, permit fees or private funds.
- Indirect fiscal impacts would result from costs to provide increases in public services (police, fire, sewer, utilities, etc.) to new facilities, if indicated.

Institutional

- Would require growth of existing agencies to ensure implementation of hazardous waste management hierarchy.
- Would require additional staff resources to provide public services to new facilities, if indicated.
- Would enable local governments to meet requirements of AB 2948 Tanner Legislation.

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- Reduced health and safety risks from improper disposal of hazardous wastes.

Sense of Community

- No significant impacts

Urban Patterns

- New generator businesses without on-site recycling or treatment facilties may locate in the vicinity of recycling/treatment facilities.

Equity

- Existing generator businesses are excluded from Actions 3.1 and 3.2.

Production of Goods and Services

- Source reduction efforts by generators may result in product substitutions and raw material substitutions in their processes, which will be facility specific.
- Could allow influx of industrial/commercial business that provide transfer facilities, off-site recycling or waste treatment services.
- In some cases, would allow industry/business to stay rather than be closed by stringent direct emission or discharge requirements.

Income and Investment

- New recycling or treatment equipment purchases or facilities construction will compete for funds in money markets.

Consumer Expenditures

- Where private industry costs to recycle or treat hazardous wastes are passed on in product prices, costs of goods and services will increase.

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 4. POTENTIAL EXPOSURE OF POPULATIONS TO HAZARDOUS WASTE SHALL BE MINIMIZED WHEN SITING NEW HAZARDOUS WASTE MANAGEMENT FACILITIES								
ACTION 4.1 The health risk assessment process along with consideration of cumulative impacts shall be used when siting new hazardous waste management facilities	Evaluate health risks to local populations from potential exposure to hazardous materials. Consider cumulative impacts of long-term exposure from facility(ies) and cumulative exposure effects from other generators in the area.	Hazardous Waste Management Plan Implementation Committee, Bay Area Counties	Continuous	California Environmental Quality Act (CEQA)	Undetermined	Undetermined	Project applicant	Voluntary
ACTION 4.2 Bay Area counties and cities shall use the Regional Plan siting criteria as a guide for siting decisions to ensure maximum environmental protection	Mandatory site requirements: (See Chap. VI for more detail) • > 200 ft from a fault zone; • Not within environmentallly sensitive areas: parklands, designated open spaces, critical habitats, wetlands, prime agricultural lands and mineral resource areas; • Outside of: – dam or reservoir failure inundation area, – cultural/aesthetic areas, – immediate airport approach zone, or – military lands. Recommended site criteria: • Minimum distance to nearest residential zone/dwelling; • Minimum distance to: – immobile populations – public assembly facilities; • Capable local emergency services & utilities; • Stable soils (not on highly-permeable soils); • Outside 100-yr. floodplain; • Min. threat to surface waters • Groundwater: – meets RWQCB standards – outside major recharge zones – outside of supply wells or fields – strong foundation – adeq. monitoring system; • Access to sewer/and treatment capacity; • Air quality effects: – meets BAAQMD standard – no net adverse impact • Near designated truck routes • Minimum noise impacts.	Bay Area counties and cities	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS

POLICY 4. POTENTIAL EXPOSURE OF POPULATIONS TO HAZARDOUS WASTE SHALL BE MINIMIZED WHEN SITING NEW HAZARDOUS WASTE MANAGEMENT FACILITIES

NOTE: The following impacts are associated with the siting of new facilities in general. Each new facility proposal will require an individual EIR to assess the impacts specific to the proposed site and type of facility.

<u>Air Quality</u>

- Localized dust/particulate matter from construction of new facilities
- No net adverse impact on local or regional air quality

<u>Water Quality</u>

- Minimal surface water runoff/sediment movement beyond site during construction.
- No net adverse impact on local surface or groundwaters.

<u>Physical/Natural Resources</u>

- Permanent alteration of soil conditions, runoff patterns, ground cover and wildlife on facility site.
- Buffer zones (50-600 ft) of open space will be required adjacent to new hazardous waste management facilities.

<u>Energy/Utilities</u>

- New utilities network and connections required for new facilities.
- Increased electrical energy and/or natural gas use from new facilities.
- Increased demand on sewer utilities.

<u>Amenities</u>

- Facility construction, operation and design may have adverse visual, odor and noise effects.

<u>Air Quality</u>

- Control fugitive dust during construction by periodic wetting of work area or restriction of earth-moving during high-wind periods.
- The BAAQMD would determine, on a case-by-case basis, the need for modeling of emissions concentrations of criteria/non-criteria polllutants, and risk assessment. Direct emissions, indirect emissions, and proximity to sensitive receptors would be considered.
- Facilities operations, particularly of an incinerator, may be reduced or halted if weather conditions prevent effecitve ventilation of air-borne pollutants.
- Emissions offsets may be required by the county. Specific offset acitons to be determined on a case-by-case basis.

<u>Water Quality</u>

- Prepare site-specific EIR where impacts may be significant.
- Install impervious surfaces + berms in TSD facilities where haz. wastes are handled/ stored to isolate from surface/groundwater. Direct all storm runoff from contained areas to impervious storage area with 100-yr storm capacity; test and treatment runoff as necessary.

<u>Physical/Natural Resources</u>

- Enact zoning/land use restrictions to ensure buffer zones will remain in open space.
- Prepare site-specific EIR where impacts may be significant.

<u>Energy /Utilities</u>

- Optimize facility design to recycle materials and use less energy-intensive processes, where possible.
- Use steam cogneration and/or waste heat from incineration or refining/reclamation processes to heat spaces or water elsewhere on site.

<u>Amenities</u>

- Facility construction and operation plans should meet local city/county criteria for visual compatibility and to control noise, vibration, light/glare, and shadowing
- Prepare site-specific EIR where impacts may be significant.

<u>Financial</u>

- Indirect fiscal impacts would result from costs to provide public services (police, fire, water, power and sewer utilities to new facility.

<u>Institutional</u>

- Would require growth of existing agencies to ensure proper site evaluation and monitoring of site construction/operations.
- Would require additional staff resources to provide public services to new facilities, if indicated.
- Would enable local governments to meet requirements of AB 2948 Tanner Legislation.

<u>Housing Supply</u>

- No significant impacts

<u>Physical Mobility</u>

- No significant impacts

<u>Health and Safety</u>

- Required on-site containment areas will reduce the potential for hazardous materials to escape beyond site.
- Required off-site buffer zones (50-600 ft) will reduce potential of exposure to populations from hazardous materials incidents.

<u>Sense of Community</u>

- No significant impacts

<u>Urban Patterns</u>

- New generator businesses without on-site recycling /treatment facilities may locate in the vicinity of new hazardous waste management facilities.
- Buffer zones around facilities and segregation away from population centers and sensitive areas will set new facilities in isolated locations.

<u>Production of Goods and Services</u>

- Employment (temporary and permanent job creation) would depend on type of new facilities.

<u>Income and Investment</u>

- Increased wages and salaries may result from jobs created.
- Facility construction and operation will compete for funds on money markets.

<u>Consumer Expenditures</u>

- Where private industry costs to meet environmental regulations are passed on in product prices, costs of goods and services will increase.

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 5. A PROCESS MUST BE DEVELOPED TO ASSURE SHARED RESPONSIBILITY FOR THE ESTABLISHMENT OF REGIONAL HAZARDOUS WASTE FACILITIES THROUGHOUT THE REGION								
ACTION 5.1 ABAG should facilitate implementation of fair-share responsibility for hazardous waste facility siting throughout the region	ABAG should facilitate inter-jurisdictional agreements where appropriate.	ABAG	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
ACTION 5.2 ABAG shall explore the feasibility of forming a Hazardous Waste Management Authority using a Joint Powers Agreement (JPA) - such as the ABAG JPA	The advantages and disadvantages of using a JPA shall be explored for feasibility as a regional alternative to the State siting appeals process (California Health & Safety Code).	ABAG	1989-90	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
ACTION 5.3 Assure equitable facility distribution within the region, if a Hazardous Waste Management Authority is formed under the ABAG JPA.	The Hazardous Waste Management Authority, if used, shall develop a method to assure equitable facility distribution within the region.	Hazardous Waste Management Authority	Pending to Action 5.2	Joint Powers Agreement	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS

POLICY 5. DEVELOP A PROCESS TO ASSURE SHARED RESPONSIBILITY FOR THE ESTABLISHMENT OF REGIONAL HAZARDOUS WASTE FACILITIES THROUGHOUT THE REGION

Air Quality

- Regional hazardous waste management facilities would reduce the total number of new local facilities and allow greater consideration for siting outside of areas with air quality problems.
- Site-specific impacts would be similar to Policy 3.

Water Quality

- Regional hazardous waste management facilities would reduce the total number of new local facilities and allow greater consideration for siting outside of areas with water quality problems.
- Site-specific impacts would be similar to Policy 3.

Physical/Natural Resources

- Regional hazardous waste management facilities would reduce the total number of new local facilities and allow greater consideration for siting outside of areas with sensitive or unique physical, natural and cultural resources.
- Site-specific impacts would be similar to Policy 3.

Energy

- Regional facilities would result in fewer new facilities with a lower total demand on energy and other utilities compared to the duplication of many facilities in each county.
- Site-specific impacts would be similar to Policy 3.

Amenities

- Impacts would be specific to each new regional facility (see Policy 3).

Air Quality (site specific)

- Control fugitive dust during construction by periodic wetting of work area or restriction of earth-moving during high-wind periods.
- The BAAQMD would determine, on a case-by-case basis, the need for modeling of emissions concentrations of criteria/non-criteria polllutants, and risk assessment. Direct emissions, indirect emissions, and proximity to sensitive receptors would be considered.
- Facilities operations, particularly of an incinerator, may be reduced or halted if weather conditions prevent effecitve ventilation of air-borne pollutants.
- Emissions offsets may be required by the county. Specific offset acitons will be determined on a case-by-case basis.

Water Quality (site specific)

- Apply RHWMP siting criteria for all new facilities (refer to Action 4.2).
- Prepare site-specific EIR where impacts may be significant.
- Install impervious surfaces + berms in TSD facilities where haz. wastes are handled/stored to isolate from surface/groundwater. Direct all storm runoff from contained areas to impervious storage area with 100-yr storm capacity ; test and treatment runoff as necessary.

Physical/Natural Resources

- Apply RHWMP siting criteria for all new facilities (refer to Action 4.2).
- Prepare site-specific EIR where impacts may be significant.

Energy (site specific)

- Optimize facility design to recycle materials and use less energy-intensive processes, where possible.
- Use steam cogneration and/or waste heat from incineration or refining/reclamation processes to heat spaces or water elsewhere on site.

Amenities (site specific)

- Use RHWMP siting criteria for new facilities
- Facility construction and operation plans should meet local city/county criteria for visual compatibility and to control noise, vibration, light/glare, and shadowing
- Prepare site-specific EIR where impacts may be significant.

Financial

Direct Public Cost of Implementation

- Design, construction and operation costs are facility-specific.

Fiscal Effects on Local Government

- If public sector funding is involved in the development of new regional facilities, cost-sharing among one or more counties would facilitate the financing of costly new facilities (e.g. residuals repository) that would be difficult for a single county to bear alone.
- Specific fiscal effects depend on choice of financing mechanisms as identified in Policies 11 and 12.
- Indirect fiscal impacts on local jurisdictions/counties would result from costs to provide public services to new facilities (e.g. police and fire protection). These costs could be recovered through hazardous waste facilities taxes (up to 10% of gross receipts) to local jurisdictions/counties.
- Undetermined administrative costs associated with establishing and maintaining a new institutional entity–the Bay Area Hazardous Waste Management Authority.

Institutional

- Would enable counties to meet requirements of AB 2948 Tanner legislation.
- Would potentially result in formation of a new joint powers entity–the Bay Area Hazardous Waste Management Authority.
- Involves coordination between ABAG and county agencies preparing Hazardous Waste Management Plans.

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- Consolidation of regional hazardous waste management sites would reduce the risk further for hazardous materials incidents.

Sense of Community

- No significant impacts

Urban Patterns

- No significant impacts

Equity

- Assurance of equitable distribution of new hazardous waste management facilities within the region.

Production of Goods and Services

- Employment (temporary and permanent job creation) would depend on type of new facility.

Income and Investment

- Increased wages and salaries may result from jobs created.
- Facility construction and operation will compete for funds on money markets.

Consumer Expenditures

- Where private industry costs to meet environmental regulations are passed on in product prices, costs of goods and services will increase.

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 6. ON-SITE TREATMENT METHODS FOR CLEAN-UP OF CONTAMINATED SITES SHALL BE IMPLEMENTED WHEN ENVIRONMENTALLY SOUND AND ECONOMICALLY FEASIBLE								
ACTION 6.1 ABAG shall take steps to encourage the DHS Toxic Substances Control Division (TSCD) to require on-site clean-up of abandoned hazardous waste sites whenever technically and economically feasible.	ABAG shall encourage counties, cities and special districts to draft and send resolutions to the Department of Health Services urging on-site clean-up of abandoned hazardous waste sites whenever technically and economically feasible.	ABAG	1989-90	Not applicable	Undetermined	Undetermined	To be determined	Voluntary
POLICY 7. PERMANENT LOCAL PROGRAMS SHOULD BE DEVELOPED TO REDUCE AND MANAGE HAZARDOUS WASTES FROM HOUSEHOLDS AND SMALL QUANTITY GENERATORS (SQG)								
ACTION 7.1 Local governments should develop permanent programs to accept household hazardous waste. These facilities should be expanded to serve small quantity generator businesses, where feasible.	Permanent hazardous waste collection facilities should be set-up in each county to accept household wastes, and, where feasible, SQG wastes as well. ABAG should develop guidance material and provide assistance to local jurisdictions for setting-up these programs.	ABAG, Bay Area counties and cities	Continuous	County Hazardous Waste Management Plans	$100,000–250,000	100%	Fees/surcharges assessed on solid waste fees–as authorized by Chapter 574–government Code, Sect.66798.5 1986. (AB 1809, Tanner) or landfill fees–as authorized by Chapter 1319-Revenue & Taxation Code, Section 45001 1987 (AB 2448, Eastin). Refer also to Policies 11 and 12	County Hazardous Waste Management Plans

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	INSTITUTIONAL/FINANCIAL EFFECTS	ECONOMIC EFFECTS	SOCIAL EFFECTS

POLICY 6. ON-SITE TREATMENT METHODS FOR CLEAN-UP OF CONTAMINATED SITES SHALL BE IMPLEMENTED WHEN ENVIRONMENTALLY SOUND AND ECONOMICALLY FEASIBLE

Air Quality

- No significant impacts

Water Quality

- No significant impacts

Physical/Natural Resources

- No significant impacts

Energy

- No significant impacts

Amenities

- No significant impacts

No mitigations required for environmental impacts associated with Policy 6.

Financial

- No significant impacts

Institutional

- No significant impacts

Production of Goods and Services

- No significant impacts

Income and Investment

- No significant impacts

Consumer Expenditures

- No significant impacts

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- No significant impacts

Sense of Community

- No significant impacts

Urban Patterns

- No significant impacts

POLICY 7. PERMANENT LOCAL PROGRAMS SHOULD BE DEVELOPED TO REDUCE AND MANAGE HAZARDOUS WASTES FROM HOUSEHOLDS AND SMALL QUANTITY GENERATORS (SQG)

Air Quality

- Would improve air quality indirectly with reduction in improper disposal of household hazardous wastes.

No mitigation required.

Water Quality

- Would improve water quality indirectly with reduction in improper disposal of household hazardous wastes.

No mitigation required.

Physical/Natural Resources

- Would improve recovery of physical resources indirectly with reduction in improper disposal of household hazardous wastes.

No mitigation required.

Energy

- No significant impacts

No mitigation required.

Amenities

- Permanent facility construction, operation and design may have minor visual, odor or noise effects.

Miitigation: facility design and operation should be compatible with surrounding area; using RHWMP siting criteria—where applicable.

Financial

Direct Public Cost of Implementation:

- Capital cost range for permanent facilities:
  — $10,000–20,000 (San Bernardino Co.)
  — $300,000 (San Francisco City/County)
- Operation/disposal costs for permanent facilities:
  — $20,000-50,000 (San Bernardino Co.)
  — $200,000 (San Francisco City/County)

Fiscal Effects on Local Government:

- Costs to be covered by solid waste or other utility fee surcharges @ $0.50–1.50 per household; or
- Costs to be covered by increase in landfill tipping fees in an amount sufficient to cover program costs.

Institutional

- Would enable counties to meet requirements of AB 2948 Tanner legislation.
- Would require growth of existing agencies to provide permanent household hazardous waste programs.
- May result in higher level of cooperation among agencies, local governments and generators.

Production of Goods and Services

- No significant impacts

Income and Investment

- Indirect economic benefits to businesses providing household hazardous wastes management or recycling services

Consumer Expenditures

- No significant impacts

Housing Supply

- No significant impacts

Physical Mobility

- Localized short-term traffic disruptions may occur during hours of operation, particularly with periodic one-day collection events.

Health and Safety

- Decrease in health risks to sanitation/landfill workers through reduction of improper disposal of household hazardous wastes in trash.
- Decrease in health risks to householders as more hazardous wastes are removed from households.

Sense of Community

- Collection programs provide positive community image.
- Participation in a collection program develops a sense of individual household responsibility; and neighborhood linkage for pooled household participation.

Urban Patterns

- No significant impacts

Equity

- If financed through solid waste or utility fees, not all fee payers may need or desire program.
- Households that do not pay solid waste or designated utility fees, would not be part of the revenue base.

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 8. ABAG AND LOCAL GOVERNMENTS SHALL ENCOURAGE PROGRAMS AND FACILITIES THAT PROVIDE FOR RECYCLING OF HOUSEHOLD AND SQG WASTES								
ACTION 8.1 ABAG should work with local governments to develop programs and facilities that provide for recycling of household and SQG wastes	Recycling programs should be explored for the following types of hazardous wastes: • Oil-based and latex paints • Waste motor oil • Used antifreeze • Automotive products • Art/hobby materials	ABAG, Bay Area counties and cities	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary
POLICY 9. THE PERMIT PROCESS FOR SQG AND HOUSEHOLD WASTE TRANSFER AND RECYCLING FACILITIES SHOULD BE STREAMLINED TO ENCOURAGE DEVELOPMENT OF THESES TYPES OF FACILITIES								
ACTION 9.1 Streamline the federal and state permit processes for household and SQG hazardous waste transfer and recycling facilities, while ensuring consistency with local goals and policies and also protect local government decision-making options	ABAG should encourage streamlining of the following permits–where feasible: • Ongoing household hazardous waste facility and potential inclusion of SQG wastes • Variance for periodic collection programs • Hauler variance for drain oil	ABAG	Continuous	Not applicable	Undetermined	Undetermined	Refer to Policies 11 and 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	INSTITUTIONAL/FINANCIAL EFFECTS	ECONOMIC EFFECTS	SOCIAL EFFECTS

POLICY 8. ABAG AND LOCAL GOVERNMENTS SHALL ENCOURAGE PROGRAMS AND FACILITIES THAT PROVIDE FOR RECYCLING OF HOUSEHOLD AND SQG WASTES

Air Quality

- Would improve air quality indirectly with reduction in improper disposal of household hazardous wastes.

Water Quality

- Would improve water quality indirectly with reduction in improper disposal of household hazardous wastes.

Physical/Natural Resources

- Would improve recovery of physical resources indirectly with reduction in improper disposal of household hazardous wastes.

Energy

- No significant impacts

Amenities

- Would improve visual and aesthetic amenities indirectly with reduction in improper disposal of household hazardous wastes.

No mitigations required for environmental impacts associated with Policy 8.

Financial

Direct Public Cost of Implementation

- Capital costs: $10,000–20,000 per each permanent facility.
- Operation & disposal costs: $20,000-50,000 per each permanent facility.

Fiscal Effects on Local Government

- Costs to be covered by solid waste or other utility fee surcharges @ $0.50–1.50 per household; or
- Costs to be covered by increase in landfill tipping fees in an amount sufficient to cover program costs.

Institutional

- Would enable counties to meet requirements of AB 2948 Tanner legislation.
- Would require growth of existing agencies to provide permanent household hazardous waste programs.
- May result in higher level of cooperation among agencies, local governments and generators.

Production of Goods and Services

- No significant impacts

Income and Investment

- Indirect economic benefits to businesses providing household hazardous wastes management or recycling services

Consumer Expenditures

- No significant impacts

Housing Supply

- No significant impacts

Physical Mobility

- Localized short-term traffic disruptions may occur during hours of operation, particularly with periodic one-day collection events.

Health and Safety

- Decrease in health risks to sanitation/landfill workers through reduction of improper disposal of household hazardous wastes in trash.
- Decrease in health risks to householders as more hazardous wastes are removed from households.

Sense of Community

- Collection programs provide positive community image.
- Participation in a collection program develops a sense of individual household responsibility; and neighborhood linkage for pooled household participation.

Urban Patterns

- No significant impacts

Equity

- If financed through solid waste or utility fees, not all fee payers may need or desire program.
- Households that do not pay solid waste or designated utility fees, would not be part of the revenue base.

POLICY 9. THE PERMIT PROCESS FOR SQG AND HOUSEHOLD WASTE TRANSFER AND RECYCLING FACILITIES SHOULD BE STREAMLINED TO ENCOURAGE DEVELOPMENT OF THESES TYPES OF FACILITIES

Air Quality

- No significant impacts

Water Quality

- No significant impacts

Physical/Natural Resources

- No significant impacts

Energy

- No significant impacts

Amenities

- No significant impacts

No mitigations required for environmental impacts associated with Policy 9.

Financial

- No significant impacts

Institutional

- Would facilitate or expedite the implementation of more transfer and recycling facilities.
- Would result in higher level of cooperation among agencies and local jursidictions.
- Would improve information exchange and reduce complexity of permit process.

Production of Goods and Services

- No significant impacts

Income and Investment

- No significant impacts

Consumer Expenditures

- No significant impacts

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- No significant impacts

Sense of Community

- No significant impacts

Urban Patterns

- No significant impacts

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 10. HAZARDOUS WASTE EDUCATIONAL PROGRAMS AND MATERIALS TARGETING THE PUBLIC, GENERATORS AND GOVERNMENT FACILITIES SHOULD BE DEVELOPED TO INCREASE AWARENESS OF THE PROBLEMS AND TO FACILITATE SOLUTIONS TO HAZARDOUS WASTE MANAGEMENT ISSUES								
ACTION 10.1 Develop and offer hazardous materials/ waste management curriculum through the ABAG Training Institute	The Training Institute should continue and expand its hazardous materials/waste management curriculum covering topics such as: hazardous waste regulations, first responder training, underground tanks, waste minimization etc.	ABAG Training Institute	Continuous	Not applicable	$50,000–100,000	100%	Curriculum development–refer to Action 12 financing mechanisms; training courses will be covered by Training Institute registration and tuition fees	Voluntary
ACTION 10.2 Develop publicity and educational materials for use by counties, cities and special districts	ABAG should continue to develop and make available educational material on proper use and disposal of household hazardous waste, and provide resources on publicity material usable by local jurisdictions.	ABAG	Continuous	Not applicable	$50,000	100%	Refer to Actions 10.3, 11 and 12	Voluntary
ACTION 10.3 ABAG will seek funds to develop educational materials for distribution to Bay Area governments	ABAG will explore various Federal, State, and local public and private funding sources suitable for supporting the development of hazardous waste educational material.	ABAG	1989-90	Not applicable	Undetermined	Undetermined	To be determined	Voluntary
ACTION 10.4 ABAG, in consultation with local governments, should act as a regional coordinator for local educational efforts/programs in order to minimize duplication of efforts	Regional coordination facilitates exchange and consistency of latest information to local jurisdictions, sharing of the most effective educational/publicity methods, and time/cost savings of using existing educational material	ABAG	Continuous	Not applicable	$50,000/first yr., $25,000-35,000 in succeeding years	100%	Refer to Action 10.3,	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	INSTITUTIONAL/FINANCIAL EFFECTS	ECONOMIC EFFECTS	SOCIAL EFFECTS

POLICY 10. HAZARDOUS WASTE EDUCATIONAL PROGRAMS AND MATERIALS TARGETING THE PUBLIC, GENERATORS AND GOVERNMENT FACILITIES SHOULD BE DEVELOPED TO INCREASE AWARENESS OF THE PROBLEMS AND TO FACILITATE SOLUTIONS TO HAZARDOUS WASTE MANAGEMENT ISSUES

Air Quality

- Would improve air quality indirectly as public becomes better educated–leading to reductions in improper disposal of hazardous wastes.

Water Quality

- Would improve water quality indirectly as public becomes better educated–leading to reductions in improper disposal of hazardous wastes.

Physical/Natural Resources

- Would improve renewal of physical resources indirectly as public becomes better educated–leading to reductions in improper disposal of hazardous wastes.

Energy

- No significant impacts

Amenities

- Would improve local amenities indirectly as public becomes better educated–leading to reductions in improper disposal of hazardous wastes.

No mitigations required for environmental impacts associated with Policy 10.

Financial

- Development costs of new training materials and curriculum ≈$50,000–100,000/yr.
- Development costs of publicity and educational material≈$10–300 per each 1,000 households reached.
- Notification costs using mass media (radios, television etc.) specific to type and level of effort.

Institutional

- Would result in higher level of cooperation among agencies and local governments.

Production of Goods and Services

- No significant impacts

Income and Investment

- No significant impacts

Consumer Expenditures

- May reduce increasing rate of toxics purchases as public learns to buy appropriate products in smaller amounts and increase recycling of paints and other products.

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- Decrease in health risks to santitation/landfill workers through reduction of improper disposal of hazardous wastes in trash.
- Decrease in household health risks as public becomes better informed about safer alternatives, safe use and proper disposal of toxics.

Sense of Community

- No significant impacts

Urban Patterns

- No significant impacts

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 11. THE FIRST PRIORITY FOR FUNDS COLLECTED BY JURISDICTIONS FROM HAZARDOUS WASTE MANAGEMENT FACILITIES SHOULD BE TO FINANCE THAT JURISDICTION'S HAZARDOUS WASTE PROGRAMS								
ACTION 11.1 As a minimum, counties or cities should levy a tax or fee on new hazardous waste management facilities proportionate to the amount of funding needed to finance hazardous waste management programs in the impacted area and include a portion designated to fund regional hazardous waste management activities through ABAG.	The first priority use for hazardous waste facility tax revenues should be the financing of hazardous waste management programs in the local jurisdictions near the facility.	Bay Area counties	Continuous	Chapter 1504 Health and Safety Code Sect. 25173.5 (AB 2948 Tanner)	Undetermined	Undetermined	Taxes or fees (up to 10%) of annual gross receipts of new hazardous waste facilities.	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	INSTITUTIONAL/FINANCIAL EFFECTS	ECONOMIC EFFECTS	SOCIAL EFFECTS

POLICY 11. THE FIRST PRIORITY FOR FUNDS COLLECTED BY JURISDICTIONS FROM HAZARDOUS WASTE MANAGEMENT FACILITIES SHOULD BE TO FINANCE THAT JURISDICTION'S HAZARDOUS WASTE PROGRAMS

Air Quality

- Would help remediate air quality problems, if any, in the vicinity of the new facility.

Water Quality

- Would help remediate water quality problems, if any, in the vicinity of the new facility.

Physical/Natural Resources

- Would assist in the renewal of physical resources in the vicinity of the new facility.

Energy

- No significant impacts

Amenities

- Would affect amenities in the vicinity of the new facility indirectly; highly dependant on nature of actions taken.

No mitigations required for environmental impacts associated with Policy 11.

Financial

- Costs would be borne by new hazardous waste management facilities operating in local jurisdictions.

Institutional

- Would require growth of existing agencies to provide local hazardous waste management programs.

Production of Goods and Services

- No significant impacts

Income and Investment

- No significant impacts

Consumer Expenditures

- Where private industry costs to meet increased taxes or fees are passed on, the cost of hazardous waste management services will increase.

Housing Supply

- No significant impacts

Physical Mobility

- No significant impacts

Health and Safety

- No significant impacts

Sense of Community

- Would mitigate effects of new hazardous waste management facility in local area.

Urban Patterns

- No significant impacts

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 12. LEGISLATION AND OTHER ALTERNATIVES SHOULD BE INVESTIGATED TO FUND DISPOSAL OF HAZARDOUS WASTE MANAGEMENT PROGRAMS								
ACTION 12.1 ABAG should work with the State legislature to develop a mechanism to apply a tax or fee on products containing hazardous materials to raise revenues to fund programs for local and Regional Hazardous Waste Management	Potential mechanisms include taxes on: • manufacturers or retailers of consumer products containing hazardous materials, and/or • stores selling these products. The tax or fee would be rebated to counties where the items are sold with a portion made available to ABAG for financing regional management efforts.	ABAG	1989-90	Not applicable	$25,000	100%	Chapter 1504 Health and Safety Code (AB 2948 Tanner)	Voluntary
ACTION 12.2 ABAG shall explore funding mechanisms for local governments and ABAG to finance permanent community education and collection (recycling and disposal) programs	Potential funding mechanisms for evaluation include: • Revenues from taxes collected on hazardous waste facilities as authorized by Chapter 1504–Health and Safety Code, Section 25173.5 (AB 2948 Tanner); • State legislation to provide funds for local and regional programs; • Revenues from solid waste collection fees; • Private funding institutions and private sector cooperative arrangements; and • Public institution grant programs.	ABAG	1989-90	Not applicable	$25,000	100%	Chapter 1504 Health and Safety Code (AB 2948 Tanner)	Voluntary
ACTION 12.3 Counties receiving revenues from these taxes or fees shall implement permanent community education and collection (recycling and disposal) programs	Counties shall use these tax revenues for permanent community education and collection (recycling and disposal) programs.	Bay Area counties and cities	Continuous	To be determined	Undetermined	Undetermined	Refer to Actions 12.1 and 12.2	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	INSTITUTIONAL/FINANCIAL EFFECTS	ECONOMIC EFFECTS	SOCIAL EFFECTS

POLICY 12. LEGISLATION AND OTHER ALTERNATIVES SHOULD BE INVESTIGATED TO FUND DISPOSAL OF HAZARDOUS WASTE MANAGEMENT PROGRAMS

THE FOLLOWING IMPACT DISCUSSION APPLIES TO ACTIONS 12.1 AND 12.2

Air Quality
- No significant impacts

Water Quality
- No significant impacts

Physical/Natural Resources
- No significant impacts

Energy
- No significant impacts

Amenities
- No significant impacts

No mitigations required for environmental impacts associated with Actions 12.1 and 12.2

Financial
- No significant impacts

Institutional
- May result in higher level of cooperation among agencies, local jurisdictions, commercial and business interests.
- May improve information exchange on feasibility and applicability of various financing mechanisms.

Production of Goods and Services
- No significant impacts

Income and Investment
- No significant impacts

Consumer Expenditures
- No significant impacts

Housing Supply
- No significant impacts

Physical Mobility
- No significant impacts

Health and Safety
- No significant impacts

Sense of Community
- No significant impacts

Urban Patterns
- No significant impacts

THE FOLLOWING IMPACT DISCUSSION APPLIES TO ACTION 12.3

Air Quality
- Would improve air quality indirectly with reduction in improper disposal of household hazardous wastes.

Water Quality
- Would improve water quality indirectly with reduction in improper disposal of household hazardous wastes.

Physical/Natural Resources
- Would improve recovery of physical resources indirectly with reduction in improper disposal of household hazardous wastes.

Energy
- No significant impacts

Amenities
- Would improve visual and aesthetic amenities indirectly with reduction in improper disposal of household hazardous wastes.

No mitigations required for environmental impacts associated with Action 12.3.

Financial

Direct Public Cost of Implementation
- Capital costs per each permanent facility
  — $10,000–20,000 (San Bernardino Co.)
  — $300,000 (San Francisco City/County)
- Operation & disposal costs per each permanent facility:
  — $20,000-50,000 (San Bernardino Co.)
  — $200,000 (San Francisco City/County)

Fiscal Effects on Local Government
- Costs to be covered by solid waste or other utility fee surcharges @ $0.50–1.50 per household; or
- Costs to be covered by increase in landfill tipping fees in an amount sufficient to cover program costs.

Institutional
- Would enable counties to meet requirements of AB 2948 Tanner legislation.
- Would require growth of existing agencies to provide permanent household hazardous waste programs.
- May result in higher level of cooperation among agencies, local governments and generators.

Production of Goods and Services
- No significant impacts

Income and Investment
- Indirect economic benefits to businesses providing household hazardous wastes management or recycling services

Consumer Expenditures
- No significant impacts

Housing Supply
- No significant impacts

Physical Mobility
- Localized short-term traffic disruptions may occur during hours of operation, particularly with periodic one-day collection events.

Health and Safety
- Decrease in health risks to sanitation/landfill workers through reduction of improper disposal of household hazardous wastes in trash.
- Decrease in health risks to householders as more hazardous wastes are removed from households.

Sense of Community
- Collection programs provide positive community image.
- Participation in a collection program develops a sense of individual household responsibility; and neighborhood linkage for pooled household participation.

Urban Patterns
- No significant impacts

Equity
- If financed through solid waste or utility fees, not all fee payers may need or desire program.
- Households that do not pay solid waste or designated utility fees, would not be part of the revenue base.

TABLE X-5 SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

RECOMMENDED POLICIES OR ACTIONS	GENERAL DESCRIPTION	RESPONSIBLE AGENCY (OR AGENCIES)	SCHEDULE FOR ACTION	LEGAL AUTHORITY	TOTAL COST/YEAR OF RECOMMENDED ACTION	PORTION OF TOTAL COST/YR. DIRECTLY ATTRIBUTABLE TO THIS PLAN	FINANCING MECHANISM	MEASURES TO ENSURE IMPLEMENTATION
POLICY 13. CURRENT AND ACCURATE DATA ON MANAGING AND MONITORING HAZARDOUS WASTES SHOULD BE MADE AVAILABLE TO LOCAL GOVERNMENTS. THIS INCLUDES DATA ON GENERATION, TREATMENT, DISPOSAL, ENVIRONMENTAL IMPACTS AND NEW FACILILITY PROJECTS								
ACTION 13.1 ABAG should establish a data clearinghouse to provide updates of facility proposals in the region	A regional data clearinghouse will promote timely information exchange to local governments on new facility proposals and updates of current facility proposals in the region.	ABAG	Continuous	Not applicable	$20,000	100%	Refer to Policy 12	Voluntary
ACTION 13.2 ABAG should provide guidance and coordinate the three-year updates of the county and regional hazardous waste management plans.	ABAG, in conjunction with the Implementation Committee established in Action 1.1, will coordinate the three-year updates of the County and Regional Hazardous Waste Management Plans to facilitate optimum planning and use of hazardous waste managment programs and facilities.	ABAG, Hazardous Waste Management Plan Implementation Committee	1991 and every three years thereafter	Chapter 1504 Health and Safety Code (AB 2948 Tanner)	Undetermined	Undetermined	Refer to Policy 12	Voluntary
POLICY 14. TRANSPORTATION OF HAZARDOUS WASTE SHOULD BE PLANNED AND COORDINATED ON A REGIONAL AND SUB-REGIONAL BASIS								
ACTION 14.1 ABAG should act as a coordinator between local governments and agencies involved with transportation regulations	Coordination between local governments and agencies involved with transportation regulations promotes systematic planning to meet transportation regulations and needs.	ABAG	Continuous	Not applicable	$20,000	100%	Refer to Policy 12	Voluntary
ACTION 14.2 ABAG, counties and cities should define routing corridors for transport of hazardous wastes such that potential exposure is minimized.	Routing corridors for transport of hazardous wastes should be planned to minimize risk of exposure from hazardous materials incidents. This transportation plan should be updated at least every five years.	ABAG, Bay Area counties and cities	1989-90, and every 5 years thereafter	Not applicable	$50,000	Undetermined	Refer to Policy 12	Voluntary

TABLE X-5. SAN FRANCISCO BAY AREA REGIONAL HAZARDOUS WASTE MANAGEMENT PLAN POLICY DESCRIPTIONS, IMPACT EVALUATION AND MITIGATION MEASURES (continued)

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES TO REDUCE ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL EFFECTS	SOCIAL AND ECONOMIC EFFECTS
POLICY 13. CURRENT AND ACCURATE DATA ON MANAGING AND MONITORING HAZARDOUS WASTES SHOULD BE MADE AVAILABLE TO LOCAL GOVERNMENTS. THIS INCLUDES DATA ON GENERATION, TREATMENT, DISPOSAL AND THE ENVIRONMENTAL IMPACTS OF HAZARDOUS WASTE.			
Air Quality • No significant impacts Water Quality • No significant impacts Physical/Natural Resources • No significant impacts Energy • No significant impacts Amenities • No significant impacts	***No Mitigations required for environmental impacts associated with Policy 13.***	Financial • No significant impacts Institutional • May result in higher level of cooperation among agencies, local jurisdictions, commercial and business interests. • May improve information exchange on feasibility and applicability of various financing mechanisms.	Housing Supply / Physical Mobility • No significant impacts Health and Safety • No significant impacts Sense of Community / Urban Patterns • No significant impacts Production of Goods and Services • No significant impacts Income and Investment • No significant impacts Consumer Expenditures • No significant impacts
POLICY 14. TRANSPORTATION OF HAZARDOUS WASTE SHOULD BE PLANNED AND COORDINATED ON A REGIONAL AND SUB-REGIONAL BASIS			
Air Quality • Increased risk of emissions from hazardous waste incidents along designated transportation corridors. • Reduced risk of emissions from hazardous waste incidents in areas where hazardous waste transportation traffic has been limited or prohibited. Water Quality • Increased risk of discharges to surface waters from hazardous waste incidents along designated transportation corridors. Physical/Natural Resources • Increased risk of impacts from hazardous waste incidents to sensitive habitat areas adjacent transportation corridors. Energy • No significant impacts Amenities • Increased congestion and noise on local access routes or specific segments of major transportation cooridors from hazardous waste transportation traffic.	Air Quality • Site off-site facilites near generators to reduce long-distance travel; access to major transportation routes should be a primary consideration in the siting of TSD facilities. • In assessing specific TSD facility proposals, evaluate the comparative benefits and impacts of using rail and truck transportation of hazardous wastes. Water Quality • Runoff from major transportation corridors should be diverted from sensitive water bodies. Physical/Natural Resources • Hazardous waste tranpsortation routes sould avoid crossing or passing near sensitive habitat areas. Energy • No mitigation required. Amenities/Health and Safety • Ensure that haz. waste haulers meet all pertinent federal/state safety requriements (vehicle inspection, waste containerization/ loading, and employee safety training). • Route hazardous waste shipments in safest manner possible. Avoid residential areas and immobile populations along transporation corridors, to the extent feasible. • Where necessary, upgrade affected transportation corridors to provide for the safe transport of hazarodus wastes.	Financial • Indirect fiscal impacts would result from costs to provide increases in road maintenance for designated corridors. Institutional • Would result in higher level of cooperation among agencies, local jurisdictions and generators. • Would require additional staff resources to provide public services to designated transportation corridors.	Housing Supply • No significant impacts Physical Mobility • No significant impacts Health and Safety • Reduced health and safety risks to general population and sensitive areas by restricting hazardous waste traffic to designated corridors. Sense of Community • No significant impacts Urban Patterns • New generator businesses without on-site recycling or treatment facilties may locate in the vicintiy of hazardous waste transportation corridors. Production of Goods and Services • No significant impacts Income and Investment • No significant impacts Consumer Expenditures • No significant impacts

X.6.2 Operation of New or Expanded Facilities

Implementation of the hazardous waste management hierarchy--leading to the operation of new on-site recycling and/or treatment facilities, as well as new off-site recycling and/or treatment facilities, would generate local and potentially regional effects depending on the type and size of facilities operations. While the RHWMP does not designate or site new facilities, adverse impacts that would probably occur with a majority of the new or expanded facilities including:

- Extension or new construction of water supply, sewer and utility lines to new areas-including some rural areas beyond existing infrastructure;
- Incremental increases in air emissions associated with the usage of specific chemicals and gases in the recycling or treatment process (e.g. solvents, degreasers, disinfectants);
- Where recycling or treatment methods involve water processes (and sewer discharge permits), increases in aqueous discharges to the sanitary sewers which will require incremental treatment capacity and capability;
- Expansion of public services (e.g. police, fire and emergency services) to serve the new facilities - which will probably be in remote areas away from population centers; and
- Increased traffic in the vicinity of new facilities from:
  - transportation of hazardous wastes to intermediate transfer/ storage facilities, delivery of raw materials used in the recycling/treatment facilities, transfer of hazardous wastes from other generators or transfer/storage facilities for recycling and/or treatment.
  - transfer of recycled material to secondary users or other transfer/ storage facilities, and
  - transfer of recycling/treatment residues to a residuals repository.
- Increased risk of public exposure to hazardous materials/ wastes from on-site accidents and transportation of these materials to and from the new facilities.

X.6.3 Secondary Impacts

Plans to construct hazardous waste management facilities often face opposition on the basis of the potential growth-inducing effects in the area for new hazardous-waste generating businesses and more hazardous waste management facilities - which translate as increased risk of exposure to hazardous mater-

ials and/or wastes. One of the purposes of the RHWMP is to identify acceptable regional projections of hazardous waste generation through the year 2000 (based on various management strategies) to help counties plan for the type and number of new off-site hazardous waste management facilities needed to accommodate long-term industrial/commercial growth. The RHWMP would project for the year 2000 a range of estimated waste volumes to be managed off-site:

- 328,044 tons/yr (40% reduction scenario);
- 492,067 tons/yr (10% reduction scenario); or
- 546,741 tons/yr (no reduction scenario);

These generation rates are based on economic activity projections by county and industry sector assuming that the relationship between waste generation and economic output level in 1986 remains constant. The RHWMP and the county HWMPs are planned to be updated every three years. This will allow for further examination of waste generation volumes and anticipated facilities needs.

The potential for a specific off-site facility to induce growth beyond that projected to occur in an area can only be assessed during the planning and assessment of each specific project. Adverse environmental effects of the accommodated development could be mitigated by actions of the affected local governments (e.g., zoning, capital improvements budgets) and by actions of regional, State and Federal agencies responsible for meeting air and water quality standards and objectives.

X.7 Analysis of Alternatives

X.7.1 The No Action Alternative to the Regional Hazardous Waste Management Plan

The major alternative to the RHWMP in its entirety is one of no action. The impacts identified in the impact assessment section (Table X-5), were measured against that alternative. The no action alternative was not considered to be feasible for several reasons. California Assembly Bill 2948 (Tanner, 1986) designated ABAG to prepare a Regional Hazardous Waste Management Plan for the San Francisco Bay Region. Guidelines for preparing regional and county HWMPs were developed by the California Department of Health Services pursuant to this legislation. Without the RHWMP, the region would specifically be unable meet the DHS guidelines on the following regional requirements:

- Quantification of current and future hazardous waste generation in the region;
- Assessment of existing and projected future handling and management practices in the region;
- Incorporation of the "hazardous waste hierarchy" (and waste reduction) into the RHWMP;
- Development of regional siting criteria for local hazardous waste management facilities;
- Promulgation of safe and effective hazardous waste management practices;
- Development of incentives for research on more efficient waste treatment technologies; and
- Development of a process for coordinating future updates on the various county and Regional HWMPs.

As the designated organization for the San Francisco Bay Region, ABAG is obligated to establish a process and produce a Regional Hazardous Waste Management Plan for final approval by the ABAG Executive Board and Bay Area Counties by February 1, 1989.

X.7.2 The No Action Alternative for Coordination and Consistency of County Hazardous Waste Management Plans

The absence of a Regional Plan implies that each Bay Area county must bear the entire responsibility of implementing a CHWMP with minimal input or exchange of information from other counties. This could lead to wide disparities among each county's HWMP goals and policies with potential inconsistencies on waste reduction and facility development approaches. Two scenarios: Minimum Waste Reduction and Maximum Facility Development are reviewed to illustrate alternative approaches that may be pursued by counties and their effects.

X.7.2.1 Minimum Waste Reduction Alternative

This alternative implies that a county would abandon its emphasis on the Hazardous Waste Management Hierarchy in favor of an in-county, off-site treatment strategy with inter-county agreements to handle some types of wastes. Each county would have to provide sufficient capacity in the appropriate waste-treatment facility types to accept the amount generated from within the county. Failure to achieve agreements with other counties in the region (or elsewhere in the state) would force a county and its generators to site and develop the full range of TSD facilities needed to

meet the projected county waste generation or provide for hazardous waste treatment, storage and disposal through some combination of new/expanded in-county facilities. The major effects of this alternative are:

- Greater local impacts associated with more extensive expansion and development of off-site TSD facilities (e.g. land use, geology, soils, natural resources, flooding and water quality, air quality, aesthetics, energy use and public utilities) as described in Table X-5;
- Increased costs for implementation of hazardous waste treatment (as opposed to a cost-effective source reduction program) and for transportation of exported wastes;
- Increased and/or high disposal costs would discourage generators and lead to illegal or improper hazardous waste disposal practices with subsequent environmental damage and public health and safety risks;
- Where out-of-region TSD facilities are relied on, the county would risk loss of access to those facilities some time in the future and could quickly become seriously deficient in handling capacity;
- Increased potential for transportation impacts related to emergency response to accidents of untreated/treated wastes and risks to human health and safety. These impacts could occur both within-county from generators to off-site TSD facilities and out-of-county to regional TSD facilities.

X.7.2.2 Maximum Facility Development Alternative

Without a regional approach to hazardous waste management, each county could ultimately become responsible for developing a full range of TSD facilities, including a residuals repository. Some areas may choose to greatly oversize their facilities and become net importers of hazardous wastes. The economic justification for provision of TSD services to out-of-county generators would be to help finance county programs and in-county facilities for local generators.

This strategy would have significant environmental, social and political impacts as described in Table X-5. However, the overall cumulative effect would be more intense. Some potential consequences that could develop from this scenario are:

- County revenues from fees on commercial TSD facilities handling large volumes of in-county and out-of-county waste could support local waste reduction and enforcement programs to a significant extent.
- Large facilities may be able to offer treatment, storage and disposal services at a lower cost. Coupled with well-financed technical assistance and enforcement programs, this could lead to reduced illegal or improper waste disposal.

The trade-off required would be the acceptance of significant impacts from TSD facility development and operations, including the image of a local area or county as the region's hazardous waste "dump" - which may be politically unacceptable. The net environmental effects of this alternative would appear to be significantly greater the Preferred Alternative in all environmental categories.

X.7.3 The No Action Alternative for Regional Coordination of Hazardous Waste Management

Poor inter-county or regional coordination for management of hazardous wastes could lead to problems in the following areas:

- Failure to achieve "fair-share" reciprocal treatment agreements between counties - this would force counties and their generators to site and develop the full range of TSD facilities (and the attendant environmental impacts) necessary to meet projected waste generation rates; or arrange for some combination of new/expanded in-county facilities and reliance upon export of hazardous waste to TSD facilities outside the region.

- Siting and operation of expensive multiple TSD facilities - such as residuals repositories - that could be more cost-effectively operated on a regional basis with fewer overall environmental impacts.

- DHS may arbitrarily site TSD facilities within a county where need for hazardous waste treatment, storage or disposal is determined. This would apply when a county elects not to develop additional local TSD facilities and rely on out-of-county or out-of-region facilities.

  Participation in regional hazardous waste planning and usage of the regional siting criteria (with resultant consolidated or reciprocal handling capacity) would give counties a strong basis to defend against arbitrary DHS facility siting.

- Increased potential for transportation impacts related to multiple and potentially-confusing hazardous waste transportation routes between counties and to other regions. Lack of regional coordination of acceptable hazardous waste transportation corridors could lead to problems with emergency response to accidents of untreated/treated wastes and risks to human health and safety.

The analyses of the Plan alternatives indicate that the potential for significant adverse environmental impacts would be greater with each alternative and therefore the Regional Hazardous Waste Management Plan is recommended for implementation.

X.8 Relationship Between Local Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

The overall goal of the Regional Hazardous Waste Management Plan is to develop a comprehensive waste management system that protects public health, safety and welfare while maintaining the economic viability of the Bay Area.

Implementation of the Plan would provide a responsible, integrated and environmentally-sensitive program for managing hazardous waste in the region. The Plan emphasizes waste minimization and a hierarchy of waste management methods in order of preference: source reduction, recycling, on-site treatment, off-site treatment, and lastly residuals repository. Local short-term uses of the environment include regional facility siting and operation and would probably have adverse local impacts. However, the ability of industry to provide shared services between counties--including reciprocal county agreements for specific types of treatment facilities--would result in the consolidation of TSD facilities with fewer new facilities overall and thus, achieving net environmental benefits to the region and state. The Plan will also help to maintain and enhance the long-term productivity of the environment by providing government and industry with management options to help meet the 1990 ban on disposal of untreated hazardous waste to landfills.

X.9 Growth Inducing Impacts

This section discusses the ways in which the Regional HWMP could foster economic or population growth, or the construction of additional housing, either directly or indirectly. Induced growth is distinguished from the direct employment, population, or housing growth of a project as being the secondary or indirect growth associated with the direct growth. The Alameda County HWMP Draft EIR (Refer to Table X-4) contains an appropriate discussion of growth-inducements and is quoted below:

"A possibly significant growth inducement issue is whether new hazardous waste management facilities in the Bay Area might attract new industries handling hazardous materials and generating hazardous wastes. A possibility exists that a clustering of such industries could occur in the vicinity of new hazardous waste facilities in order to take advantage of the hazardous waste management capability that new hazardous waste facilities could provide.

"It is important to note that it has not been determined with certainty that a causal relationship exists between the siting of hazardous waste management facilities and subsequent industrial development involving siting of facilities utilizing hazardous materials or generating hazardous wastes. In California, it seems clear that for certain hazardous waste facilities such a historic causal relationship does not exist; the development of the Casmalia Resources facility in Santa Barbara County and Chemical Waste Management's Kettleman Hills facility in Kings County has not spurred a proliferation of hazardous waste generating industrial facilities in the vicinity of these disposal sites. Other facilities, such as the former IT hazardous waste landfills in Solano and Contra Costa County, are located in industrial areas, but there is no clear evidence that the industrial development of these areas was causally related to pre-existing hazardous waste facilities.

"Indeed, it may be more plausible to say that these hazardous waste facilities developed to serve the needs of hazardous waste generators rather than that the industries moved to the area because of pre-existing hazardous waste facilities. Thus, the probability that new hazardous waste management facilities in the [Bay Area] would induce growth of new hazardous waste generating industrial facilities is uncertain.

"In order to fully consider the consequences of this plan, however, it may be useful to assume that some industries might be attracted to the [Bay Area] because of the existence of hazardous waste management facilities sited pursuant to this plan. Such a development could be considered a limited growth-inducing effect. It would not be growth-inducing in the sense of inducing population growth, the construction of housing or the addition of substantial numbers of new jobs, because residential developments are incompatible with land use designations and zoning requirements for industrial areas where hazardous waste facilities would be located and because hazardous waste generating industries are generally capital- rather than labor-intensive. Nor would the development of hazardous waste management facilities have a major infrastructure effect that would remove an obstacle for growth, a condition which is generally considered growth inducing under CEQA.

"What could occur would be a specialized type of economic growth associated with hazardous waste generating facilities. Such a development could increase the quantity of hazardous waste generated in the [Bay Area]. Localized health and safety, air quality, water quality and noise impacts associated with addi-

tional hazardous waste management facility developments would be a secondary impact of this particular type of growth inducement. Potential mitigation measures for these impacts would be siting requirements for businesses generating hazardous wastes that are similar to those proposed in the Plan for off-site commercial hazardous waste management facilities and an expansion of county and city waste enforcement programs."

X.10 Cumulative Impacts

"Cumulative impact" normally refers to the anticipated incremental effects of a project when added to other closely-related past, present, and probable future projects. In a sense, as a program EIR on a plan level document, this EIR is an analysis of cumulative effects of all types of facilities that could be developed as a consequence of implementation of the Regional HWMP.

As presented in the Regional Plan, the level of commercial/industrial development responsible for generating hazardous wastes in the Bay Area counties is projected through the year 2000 (Section V). The effects of HWMP implementation are considered, particularly for the development of off-site facilities, which would be necessary for industrial development on a region-wide basis. Off-site TSD facilities, with appropriate capacity, can serve several counties and reduce the need for multiple smaller and less cost-effective local TSD facilities. Two situations could result in significant local cumulative impacts:

- The development of a large multi-purpose facility containing one or more types of TSD facilities and serving a multiple-county area, could have a significant cumulative effect on the locality in which it is sited. Taking into consideration, the effects of normal development of other industrial facilities within an industrial area, the cumulative adverse effects of a large TSD facility on <u>local</u> traffic volume, noise levels, sewage treatment capacity, emergency services, or air quality could be significant. On a regional basis, the increments of hazardous waste transportation traffic on designated transportation corridors could also cause cumulative adverse effects on transportation corridor traffic volume, noise levels, emergency services, or air quality.

  Although a large TSD facility would place a greater burden on local emergency response services, such a facility could permit a more efficient incident response capability by emergency services areawide. The potential cumulative impacts, both favorable and adverse, of large multi-purpose facilities should be evaluated carefully on a case-by-case basis.

- A large facility combining several individual TSD facility developments could have cumulative internal effects. Whether the impacts of such a facility would be greater than the sum of the individual constituent facilities would require detailed case-by-case analysis. Factors such as waste types handled, chemical incompatibilities, potential synergistic effects, and probability and prevention of on-site accidents must be evaluated.

X.11 Effects Found Not to Be Significant

Prior to initiation of the Draft EIR, An Initial Study was conducted to screen potential significant environmental effects for evaluation in the EIR and delineate areas where no significant impacts were anticipated. Those effects found not to be significant are included in the Initial Study document in Appendix 8.

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